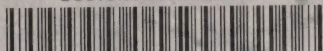


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A LETTER

TO

SIR WALTER SCOTT, BART.,

EXPOSING

CERTAIN FUNDAMENTAL ERRORS

IN HIS LATE

ESSAY ON PLANTING,

AND CONTAINING

OBSERVATIONS ON THE PRUNING AND THINNING

OF

WOODS,

AND

MAXIMS FOR PROFITABLE PLANTING.

BY W. (WITHERS.)

LONDON:

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By James Shalders, Holt.

1828.

A LETTER

SIR WALTER SCOTT BART

CERTAIN TENDENCIES OF THOUGHT

ESSAY ON READING

DESCRIPTIONS OF THE IRISH AND ENGLISH

June 25 1906

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A LETTER

TO

SIR WALTER SCOTT, BART.

SIR,

HAVING been for many years warmly interested in the culture of forest-trees, and having published a pamphlet on the subject which has had rather a widely-extended circulation; I eagerly purchased and read your Essay on Planting, printed in the last number of the Quarterly Review : and it was not without great astonishment and mortification, that I found so highly gifted and popular a writer as *Sir Walter Scott* recommending, in certain passages of that Essay, not that liberal system of culture which reason and nature point out as the most desirable whether for beauty or profit,

but the cheap, hole-digging, short-sighted Scotch system, which is calculated to bring upon those who adopt it only loss and disappointment; and endeavouring, by the sanction of his authority and the speciousness of his style, to revive and prop up those barbarous and vulgar notions on this important branch of rural economy, to which I flattered myself I had given a deadly blow.

It is rather a curious circumstance that you and I should have begun to plant at or about the same time; that each of us should 'have seen reason to change his opinion on many important points, and particularly on those in which the expense of planting is chiefly concerned;' and yet that, after 'sixteen years undeviating attention to the subject,' we should have arrived at widely different conclusions. I began with the Scotch method of pitting or digging holes for the trees, but soon abandoned it. I then tried trenching and cleaning, and ultimately manure; and the result of my experiments has been so satisfactory and so surprising, that I can now confidently recommend that mode of preparing land for

planting in almost all cases, notwithstanding the increased expense, however serious the amount of it may appear to be.

Whether your attention has ever been given to this style of planting does not very clearly appear; but when *profit*, and not ornament merely, is the object, you expressly decide in favour of that system which is attended with the '*least expense*,' and this is the point upon which we are at issue. In support of my opinions, the pamphlet above alluded to contains arguments which have never been answered, and facts that cannot be disproved; and as your essay is destitute of both, I might without writing another sentence refer to that pamphlet, and entreat you seriously to consider its statements, exhibiting as they do a complete refutation of the arguments that have been usually put forth in favour of the cheap method of planting, which, without any argument whatever, you so confidently recommend. Indeed I might leave the two methods to work their own way with the public, and rely confidently on a triumphant result; but as most gentlemen are inclined to follow the

advice of those, who promise them great profits at little risk ; and many might, from that indolence of which you accuse the ‘ lords of ‘ the soil,’ be induced to adopt your opinions without consideration : I think it best to make an immediate effort to expose their injurious tendency, and to warn all planters against adopting them.

It will I presume be admitted (laying aside the expense of planting), that the faster trees grow and arrive at maturity the more profit they will yield. This is so self-evident a truth, that no one can deny it. It is, I have hitherto thought, equally true, that trees, planted upon land which has been trenched and manured, will grow much faster than those planted on land of the same quality upon the Scotch system, which rejects, not only trenching and manuring, but every other kind of preparation on account of the expense. If this be so, the only question would be, whether the increased growth occasioned by properly preparing the soil is more than equal in profit to the additional expense ; for if it be, your assertion that the planting which yields most profit is

that which is executed at the least expense, is clearly erroneous. You, however, do not admit that trees planted upon prepared land will arrive at maturity sooner than those grown where no preparation has been used ; but state that all difference between them will disappear within the first ten or twelve years. To avoid any charge of misrepresentation, I will now quote the entire paragraph in which the above opinion is expressed.

‘ We may now be expected to say something of the preparation of the soil, by cropping, fallowing, paring, and burning, or otherwise, as is recommended in most books on the subject of planting. There can be no doubt that all or any of these modes may be, according to circumstances, *used with the utmost advantage, especially so far as concerns the early growth of wood.* Every plantation, therefore, which the proprietor desires to see *rush up* with unusual rapidity, *ought to be prepared by one of these methods, or, which is best of all, by deep trenching with the spade.* But the *expense* attending this most *effectual* mode limits it to the park and pleasure-

‘ground, and even the other coarser modes of
 ‘preparation cannot be thought of, when the ob-
 ‘ject is to plant as extensively and at as little
 ‘expense as possible. It may be some comfort to
 ‘know, that, as far as we have observed, the
 ‘difference betwixt the growth of plantations,
 ‘where the ground has been prepared, or otherwise,
 ‘supposing the soil alike, and the plants put in
 ‘with equal care, seems to disappear within the
 ‘first ten or twelve years. It is only in its ear-
 ‘lier days, that the plant enjoys the benefit of
 ‘having its roots placed amongst earth which
 ‘has been rendered loose and penetrable: at a
 ‘certain period the fibres reach the subsoil,
 ‘which the spade or plough has not disturbed, and
 ‘thus the final growth of the tree which has enjoy-
 ‘ed this advantage is often not greater than that
 ‘of its neighbour, upon which no such indulgences
 ‘were ever bestowed.’

We are all, *Sir Walter*, doomed to have
 our tempers put to severe trials. I have often,
 on hearing a man of talent state in a confident
 and authoritative manner, that which I knew,
 and he ought to have known, to be untrue or
 erroneus—I have often, on such occasions, had

some difficulty in restraining myself from giving a rather uncourteous expression to my feelings ; and I acknowledge, that, on reading the paragraph above quoted, an exclamation involuntarily burst forth, which, for the sake of good manners, I should be very sorry should appear upon paper. I have endeavoured to subdue these feelings ; but there is, even at this time, something at my tongue's end, which it is said was frequently to be seen quivering upon the late *Lord Thurlow's* lip when he was sitting on the bench of justice. However, I have now found relief ; and as it is far from my intention or wish to give you any personal offence, I will content myself with observing, that although these opinions of yours are quite at variance with the principles which govern vegetation, with the authority of our best writers, and opposed, not only to my own experience, but to the evidence of innumerable facts which force themselves upon our observation in every part of *this* kingdom, I am willing to attribute your promulgation of them to your not being sufficiently acquainted with the subject on which you were writing.

You admit, that in the ‘earlier days’ of a plantation upon prepared land, ‘the plant enjoys the benefit of having its roots placed ‘amongst earth which has been rendered loose ‘and penetrable,’ and that it ‘will *rush up* ‘with unusual rapidity.’ Do you consider this *rushing* growth healthy, and vigorous, and enduring? Or do you think it is like the forced spirits of the opium-eater, which are excited only to produce a corresponding depression? I contend, that a tree so growing will not only acquire, but maintain, a great superiority over one that is planted on an unprepared soil; and that its numerous and vigorous roots and luxuriant branches will enable it to receive food, which the poor feeble offspring of the Scotch system can never acquire. And is it possible that such a plant should be so arrested in its progress on its roots reaching the subsoil, that its puny and stunted competitor should equal it in ten or twelve years? The idea is monstrous. Why, *Sir Walter*, the former will be a better plant at the age of twelve years than the latter, if it can be kept alive, will be at thirty-five; and if you want ocular proofs, come into this county, and I will show you hun-

dreds of them. I will show you plantations only four years old upon prepared land, worth five times as much per acre as those planted upon land of equal quality upon the Scotch system twelve years *before*. There are many proofs given in my pamphlet, but as I do not wish to quote from my own work I will pass them by. My excellent neighbour and friend, *Mr. Hardy* of Letheringsett, who ranks below no man in the county for his success in planting, and the taste and spirit he displays in the improvement of his estate, will give you an opportunity of contrasting plantations upon prepared and unprepared land: there you will see the former overtaking and surpassing the latter though many years older. You may then go on to Holkham and examine the splendid woods of *Mr. Coke*, ascertain the enormous income derived from them of late years, and compare them with the wretched-looking and profitless plantations of the same, or a greater age, raised upon the Scotch system, with which our county abounds, but which out of delicacy to their owners I will not here more particularly refer to.

I will not confine myself to Norfolk for illustrations of your favourite Scotch style of planting, but will give you a specimen of its effects in a distant part of the kingdom; exhibiting at the same time the injurious system which prevails in our public forests, and affording a specimen of the capacity of those under whose superintendence they are placed. I am enabled to do this from the publication of a *Mr. Wm. Billington*, which has just fallen into my hands, but which bears the date of 1825. This gentleman describes himself to be a ‘Member of the Caledonian Horticultural Society, Superintendant of the inclosing, fencing, draining, and planting of eleven thousand acres of land in the Forest of Dean, and about nine hundred acres at Chopwell in the county of Durham belonging to his Majesty, and formerly *Gardener* to the late *Lord Yarborough*, and the present *Earl of Haddington*.’ It appears that he was appointed ‘Surveyor-general of Dean Forest in the year 1810;’ and he apologizes for his publication on account of the great importance (both to the nation and to most landed proprietors) of raising young oak plantations ‘*for future navies*.’ He

acknowledges, that ‘ *the care and management of plantations in the first period of their growth is by far the most important of all* ; for as the human character is formed in the first ten or twelve years, *so it is with forest-plantations*. If the greatest care and skill are not used then to train them “ in the way they should go ” when young, what can be done afterwards generally has but little effect, as the experience of ages will testify.’

We shall see by and by what *Mr. Billington's* ideas of care and management are. They are bad enough to be sure, but at any rate his opinion is directly at variance with yours. He thinks (and I agree with him) that every thing depends upon early care and management. You, on the contrary, consider it of no importance, for that whether trees be well or ill managed when young, they will be of equal value at the age of ten or twelve years, by which time, according to *Mr. Billington*, they will, if previously neglected, have become wholly worthless or irreclaimable.

On reading the introduction to *Mr. Billington's*

ton's work, I expected I had found an able fellow-labourer, who would assist me in the demolition of the Scotch system: but to my great surprise, I soon discovered that he was one of its staunchest advocates; and that, notwithstanding all he had said about the importance of early care and management, he had, in his official capacity of Surveyor-general, during several years, allowed that system of raising trees to be practised in a most injurious manner. I shall notwithstanding enlist him into my service; and although I cannot cite his authority in favour of good planting, I can hold him up as an example of that which is bad, and produce his 'facts and experiments' as evidence of the complete failure of your style of planting. He shall however speak for himself; and he thus states the contract for planting Dean Forest.

'The original contract with *Messrs. Driver*
 'was to have the land holed at four feet apart
 'each way, the holes to be fifteen inches
 'square, and nine inches deep, turning the
 'soil upside down previously to paring off the
 'turf, and laying it to one side, except every

‘tenth hole which was to be eighteen inches
 ‘square with the turf taken off, and twelve inches
 ‘deep ; to plant, in every tenth hole, a
 ‘strong five-year-old oak, and in every hundredth
 ‘hole a five-year-old Spanish chesnut ;
 ‘the rest of the holes to be planted with a
 ‘sound perfect acorn, except on such parts as
 ‘should be deemed unfit for the growth of oak :
 ‘these places to be planted with ash, elm,
 ‘beech, or sycamore, with the fir and pine
 ‘tribes, but preferring the four first-specified
 ‘sorts to the fir and pine, where the ground
 ‘should be thought fit for the growth of such
 ‘trees. Each vacancy that may happen to be
 ‘made good for three years after it was first
 ‘planted, with a plant of the respective kinds.’

This was certainly planting in a *cheap* manner. You will have the goodness to mark the important results.

‘Plants and acorns were accordingly provided and planted, and the holes made agreeable to the contract ; but, *after three years trial, we were obliged to desist* and substitute
 ‘one year’s seedling oaks.’

‘ After counting the plants from the acorns
 ‘ (the first year after planting them) in nine
 ‘ thousand holes in various places in the dif-
 ‘ ferent enclosures, we never found more than
 ‘ forty plants in one hundred holes from the
 ‘ acorns, and in some only three or four plants
 ‘ in one hundred holes. On an average of
 ‘ those counted there appeared about twenty-
 ‘ four in every hundred holes, or little more
 ‘ than one fifth,’ (*Mr. Billington* should have
 said almost one-fourth) ‘ though the greatest
 ‘ care was taken to plant and mend over each
 ‘ hole with a sound good acorn ; but the
 ‘ acorns were taken out by the short-tailed
 ‘ field-mouse, rooks, and other vermin. Af-
 ‘ ter being mended over with fresh acorns
 ‘ a season or two, it was no better ; the
 ‘ plants still went off, from various causes
 ‘ which I shall hereafter describe, and in
 ‘ some of the holes where the water lodged
 ‘ the acorns rotted.

‘ After we had ceased planting acorns, we
 ‘ continued to plant one year’s seedling oaks
 ‘ in lieu of acorns, the large plants in every
 ‘ tenth hole the first time over, and to mend

‘ over the second year with two years’ seedling
 ‘ oaks : in some cases we missed one year and
 ‘ made good all failures with a strong three-
 ‘ year-old oak the last time over.’

‘ In some parts of the enclosure, where the
 ‘ plants from the acorns and seedlings had so
 ‘ failed, and the *grass, furze, &c. had become so*
 ‘ *strong* before they were finally mended over,
 ‘ and finding it no use to do so with seedlings,
 ‘ it was agreed to mend all over for the last
 ‘ time with strong four-year-old oaks, about
 ‘ one hundred and fifty to an acre, to plant
 ‘ that quantity according to the number of
 ‘ acres such enclosure contained, but to plant
 ‘ them on the barest places, as some parts
 ‘ were sufficiently stocked with what had been
 ‘ planted and what came naturally, this quan-
 ‘ ty being considered quite sufficient to stock
 ‘ the enclosure according to the spirit of *Mr.*
 ‘ *Driver’s* contract.’

‘ *On finding how fast the fern, furze, grass,*
 ‘ *and such shrubs as birch, broom, &c. increased*
 ‘ after the enclosures were shut in, and the
 ‘ impossibility of procuring five-year-old

‘ plants so fast as they were wanted to plant
 ‘ such vast tracts of land so soon as it was got
 ‘ ready, rather than defer such a duty a year
 ‘ or two till the plants arrived at that age and
 ‘ size (because size was a material object), it
 ‘ was agreed to plant strong and good three and
 ‘ four year old oaks, instead of the five-year-
 ‘ old oaks, in every tenth hole, while the holes
 ‘ could be distinguished, or we must have
 ‘ planted it with seedlings, and left the tenth
 ‘ hole unplanted for a year or two, which
 ‘ could not have been so regularly filled up
 ‘ with large plants afterwards.’

Mr. Billington's style of writing is very obscure ; but I understand from the foregoing passages, that the planting of acorns in the first instance failed, for in some places forty only in a hundred grew, and in others only three or four. Fresh acorns were then planted, but the average number of plants finally produced was but twenty-four to the hundred. In the second year it seems, that young oaks were substituted for acorns, and two-year seedlings for trees in the tenth holes which had died ; and in the third year, all failures

were filled up with three-year-old oaks. There appears also to have been a fourth year's filling up, which is spoken of as being a final one, with four-year-old oaks one hundred and fifty to an acre; but the fern, &c. continued to grow so fast, that a further filling up with five-year-old plants became necessary: these could not be procured, and younger ones were substituted. *Mr. Billington* thus enumerates the causes of these repeated failures, and singularly enough points out a remedy which he never adopted. He says—

‘ Great quantities often died, owing to the
 ‘ frosts that so frequently happen in the spring
 ‘ and summer months. After the plants come
 ‘ into leaf, being so low and on a level or rather
 ‘ below the level of the *grass and fog* (the
 ‘ old dead grass is termed fog in the forest),
 ‘ the frost has such an effect upon the plants
 ‘ below the level of that fog, that frequently
 ‘ the young shoots and leaves of the small
 ‘ plants have been killed by it, when the
 ‘ plants of three or four feet high, and that
 ‘ stood above it, have not been injured at all,
 ‘ except in the lower branches among the *fern*,

‘grass, &c. When newly planted trees lose
 ‘their leaves at that time, before they have
 ‘made any roots, they are very apt to be
 ‘killed; indeed, they hardly ever recover.
 ‘This is assuredly a strong reason against small
 ‘plants being planted in low moist situations,
 ‘or where the herbage is rank and strong. I
 ‘have seen the same effects upon the higher
 ‘ground, but not so common.

‘In the *nurseries in the same enclosures*,
 ‘and on the same elevation, *which were kept*
 ‘*clean from the grass and weeds*, the small
 ‘plants *were not injured* at all, by the same
 ‘frosts that *killed* the young shoots and leaves of
 ‘the plants *among the fog and grass*: this I
 ‘should think affords a GOOD HINT to keep
 ‘the *nurseries* of tender plants entirely *free*
 ‘*from weeds and grass.*’

Is it not surprising that this surveyor-general, who was formerly a *gardener*, should not perceive that this ‘good hint’ about *nurseries* was equally applicable to plantations; and that, had he adopted it, he would have taken the most effectual method of avoiding the repeti-

tions of filling up and mending, the mischievous effects of fog and grass, and the ravages of field-mice, of which he unceasingly complains? Mr. Billington proceeds thus :

‘ As the oak is a *long time* in most situations before it *establishes itself* in the ground, to be able to make a vigorous shoot, and to cope with the rank grass, fern, &c., small plants have but a poor chance to succeed. Wherever the land is *rich*, the plants will make an effort in the spring-months, if not destroyed by frosts, to make a few leaves to keep them alive ; but before the end of the summer, when they should make the autumnal shoot, the grass, fern, or other herbage, has got quite over them, the grass falls down upon them, kills the leaves and the young shoots, and affords a fine shelter for the mice to finish them ; and where strong fern abounds, it falls down with the first heavy snow, and does the same business for them as the grass and other herbage.’

‘ If any plant should escape the first year, the next spring the remaining plants will

‘ make fresh efforts to produce leaves and
 ‘ branches; but the same effects ensue *with*
 ‘ *increased means*, as the grass, fern, &c., get
 ‘ stronger and taller every year, and the plants
 ‘ weaker, *till they finally die.*’

It may be understood from this passage, that not only all the trees originally planted in this forest, but also a great part afterwards planted to fill up, died. It is impossible, from a statement so obscure as *Mr. Billington's*, to estimate what was the actual loss in time and money, but it is evident that it must have been very considerable. *Mr. Billington* then proceeds to give the public some idea of the expense incurred before and after the expiration of *Mr. Driver's* contract, in removing the grass and rubbish *which had occasioned the whole of this destruction.* It does not appear, however, to have been effectually done at any period; but the sums paid altogether seem to have been sufficiently large to have trenched the land in the first instance, and kept it clean afterwards, by which means a healthy and flourishing crop would have been ensured. Speaking of the growth of the fern, &c. he says—

‘ This became so serious in the forest, that
 ‘ we were obliged to have the grass cleared
 ‘ from the plants for *several years*, and a sum
 ‘ of *upwards of one thousand nine hundred*
 ‘ *pounds* was paid to *Mr. Driver* during his
 ‘ contract’ [only three years] ‘ for *clearing the*
 ‘ *grass from the small plants* to prevent them
 ‘ from *being smothered*. This is a serious ex-
 ‘ pense, if it can be avoided, which in a great
 ‘ measure it may, by substituting larger
 ‘ plants. *Very large* sums were also expended
 ‘ *for cutting the fern* in the enclosures; for af-
 ‘ ter he had fulfilled his contract, the sum of
 ‘ upwards of two hundred and sixty-four
 ‘ pounds was paid in *one season* for cutting
 ‘ fern, to save the plants from being *killed* by
 ‘ it.’

‘ What was paid in other seasons I cannot
 ‘ tell, as I have not the accounts; but it must
 ‘ have been *very considerable*, as it was obliged to
 ‘ be *followed up for several years*. Fern gathers
 ‘ strength very fast, if it is neglected to be cut,
 ‘ and will soon get, where it is sheltered, to
 ‘ six or seven feet high; and when such a mass
 ‘ falls down upon small plants, what chance

‘ have they ever to get up again, if it is not
‘ cut from them ?’

Mr. Billington then recurs to the number of plants lost, and has the following paragraphs :

‘ In four of the enclosures, which contain-
‘ ed about one thousand seven hundred acres,
‘ we estimated that two hundred thousand of
‘ the *five-year-old* oaks that were planted had
‘ been destroyed by the mice, besides the im-
‘ mense quantities from the acorns and seed-
‘ lings. *Mr. Driver* charged for three hun-
‘ dred thousand plants destroyed by mice in
‘ these four enclosures, besides what were de-
‘ stroyed from the same cause in others where
‘ no estimate or charge was made.’

It is to be observed, that none of the two hundred thousand five-year-old oaks, mentioned in this paragraph, were trees originally planted: they were trees planted to fill up, and these were lost together with *immense* quantities from acorns and seedlings.

‘ From the foregoing facts it will appear,
 ‘ that the experiment of raising a forest of oak
 ‘ from acorns, planted where they were in-
 ‘ tended to remain to become timber without
 ‘ being transplanted, was *fairly* tried, upon
 ‘ an extensive scale, and has completely fail-
 ‘ ed. Nearly the same failure, I understand,
 ‘ occurred in the New Forest as in Dean Forest,
 ‘ and about the same time.’

Mr. Billington may consider it a *fair* trial.
 I certainly do not, and it is quite clear that,
 if proper means had been used, trees might
 have been raised from acorns as well in Dean
 Forest as they are in other places, one very
 successful instance of which I shall shortly no-
 tice.

‘ To show more fully the difficulties that
 ‘ occurred in planting the forest, from the
 ‘ failure of plants by the various causes before
 ‘ enumerated, I should have stated, that, *af-*
 ‘ *ter Mr. Driver* had *finally completed* his con-
 ‘ tract by planting and mending over *all fail-*
 ‘ *ures for three years* in each enclosure, we had
 ‘ provided, in the different nurseries in the

‘ forest, to fill up such vacancies as might af-
 ‘ terwards occur, and to plant some more land
 ‘ that had been purchased, and attached to
 ‘ the forest for growing navy timber.

‘ In the year 1818, there were growing in
 ‘ the different nurseries for the aforesaid pur-
 ‘ poses, four millions and thirty-nine thou-
 ‘ sand oaks and eight hundred and eighty-
 ‘ eight thousand plants of other kinds; viz.
 ‘ firs of sorts, ash, elm, Spanish chesnut, &c.
 ‘ making a total of four millions nine hundred
 ‘ and twenty-seven thousand plants: and by
 ‘ a statement made to the commissioners in
 ‘ October, 1821, *the vacancies were at that*
 ‘ *time very extensive*, as the plants wanted to
 ‘ complete the enclosures in Dean Forest were
 ‘ two millions nine hundred and eighty-five
 ‘ thousand; to complete the enclosures, *not to*
 ‘ *plant fresh ones*, two millions of which were
 ‘ planted the following season, and the rest as
 ‘ soon as the plants arrived at a proper size.
 ‘ This was *four years after the last of the enclo-*
 ‘ *sures had been completed* according to the con-
 ‘ tract.’

It is impossible to reflect upon this statement without strong feelings both of shame and indignation, that the public money should have been thus wasted, and so enormous a loss occasioned to the country, by the gross incapacity or inattention of those who were appointed to superintend, or whose duty it was to watch over, an undertaking of such vast national importance. When it was discovered that this method of raising young oak trees for 'future navies' would not answer, when it was ascertained that the mice destroyed the acorns, and the grass and rubbish killed the young plants, is it not surprising that it should not have been perceived, that there was a radical defect in the system itself? and that instead of throwing away money in attempts to kill the mice, and to beat down or cut away the grass and herbage from the stems of the trees, or in putting in larger and more expensive plants to experience in their turn the fate of their predecessors, it would have been much wiser, and ultimately less expensive to remove the cause of these failures, by trenching the ground and keeping it clean afterwards, thereby eradicating the grass

and weeds, and preventing their future growth, and also destroying the harbour for the mice? Instead of adopting a course so obviously pointed out by common sense, instead of applying to the forest the hint given by himself as to the *nursery*; we see nothing but an obstinate adherence to a bad system throughout the whole work—the ground replanted over and over again—the grass and herbage, whins and furze, constantly destroying the trees—money expended by wholesale in yearly cutting or beating down this grass and rubbish—and finally, in 1821, four years after the last of the enclosures was completed according to *Messrs. Driver's* contract, and twelve years after the first of them had been begun, we see, that instead of yielding a profit, as ought to have been the case, nearly three million trees were then wanted, and were actually used, in filling up the vacancies in this forest.

Such are the precious effects of the Scotch mode of planting. I cannot say with you, *Sir Walter*, that it is the ‘ style of planting which ‘ is executed at the *least expense* ;’ because, if all

the items for digging holes and planting, and yearly re-digging, and ‘filling them up’—for ‘clearing the grass from the plants to prevent their being smothered,’—and for the millions of plants required to fill up the vacancies after the plantations had been completed,—if all these items, and many others which doubtless existed, were collected together, they would, I verily believe, be found to amount to a sum more than sufficient to have trenched the whole of the soil, and planted it so as to ensure a crop, to which we might have looked forward with some confidence for ‘future navies.’

We here see the state of a plantation, twelve years old, which has been raised, or attempted to be raised, upon unprepared ground; and as you say there will be no difference at that age, betwixt the growth of such a plantation and one which has had the advantage of a previously prepared soil, I beg to call your attention to the late *Mr. Nathaniel Kent’s* account of a plantation, which is standing within eight miles of the spot where I am now writing. It is as follows, and you will

find it in that gentleman's Survey of Norfolk, published in 1794 :

‘ *Mr. Windham* of Felbrig is also a considerable modern planter. Most of his plantations have been raised from seed, and there is *one that stands unrivalled*. It was sown with acorns, Spanish chesnut, and beech-mast seventeen years since ; has been already twice thinned for hurdle-wood ; the trees, most of which are *thirty feet high*, being at the regular distance of twelve feet, with a valuable underwood at four feet distance. This plantation was taken out of the park, was *well fallowed* the preceding summer to its being *sown* ; and during this state there was a *flock of sheep* in the park, which were continually *lying on the fallows*, to which in a great measure I attribute its *astonishing fertility*, as it *surpasses* every thing of the kind I ever saw, and therefore I mention this as a thing worth attending to.’

I would recommend you, *Sir Walter*, to go and examine the trees in the Forest of Dean, which are now about the age of *Mr. Windham's*

plantation at the time *Mr. Kent* wrote; and tell the public, in your next Essay on Planting, whether *they* stand unrivalled, whether they be thirty feet high: tell us of their astonishing floridity, and of their surpassing every thing of the kind you ever saw. Be able, sir, to tell us all this; or candidly come forward, and acknowledge your error, in representing that no difference exists after ten or twelve years between trees planted upon prepared and upon unprepared soil.

I must now return again to *Mr. Billington*, of whose method of planting and managing plantations, so as to prevent such grievous failures, the reader will naturally be anxious to have some account. On *wet* land, *Mr. Billington* ‘suggested to the commissioners the ‘idea of *raising the holes* for the plants above ‘the original surface, to throw off the wet ‘from the roots, by taking a spade full of ‘good earth from the dry ground to each ‘hole; but this was found to be both tedious ‘and expensive, and not affording soil sufficient to answer the purpose.’

He then suggested another method which answered a two-fold purpose, and succeeded beyond his most sanguine expectations.

‘ The turfs were cut in rows, to communicate with the drains; one row thus cut will raise the holes for about three rows of plants, which, if properly done, will carry off the water into the drains; some of them may be made into drains at a trifling expense. Thus the raising of the holes and draining the ground were done at nearly one expense, and by this method the ground is left a great deal drier, no water being capable of settling about the roots of the plants, affording at the same time a stratum of soil as thick again as the original, and by being laid down a few months before planting, *the swards rot*, and the sod becomes firmly fixed, so that they can be planted with the greatest ease without disturbing the sod; part of the roots will also be just within the original surface, and the *rich soil*, produced by the rotting of the two swards, affords a fine *pabulum* for the roots of the plants during the two first years, when they stand in *so much*

‘ need of it, preventing also their being loosened, and thrown out of the ground by the frosts or winds, as the soil about the roots is always dry and kindly, the same as if planted in the driest soils.’

‘ The effects were indeed so great, that I could safely recommend the plan to be acted upon in all wet ground, as it can be done with nearly the same expense as draining, the plants thriving exceedingly well, and the other advantages almost incalculable.’

‘ *Mr. Driver’s* men holed the soil in the common way, only not so deep as before laying on the sods ; but I do not think this mode necessary, as it is attended with more trouble and expense, and robs the plant of part of the *rich soil*, by removing the turf where the hole and plant are to be. I had several acres done in the way I have recommended for large five-year-old oaks, which was attended with the greatest success, without the loss of scarce a plant, the whole taking to the soil, and thriving in an extraordinary degree.’

‘ Before we fell upon this plan, the plants
 ‘ where it had been planted in such cold wet
 ‘ lands, particularly where the fir-tribe were
 ‘ planted, had failed, and we raised all such
 ‘ holes with a large square turf planting it
 ‘ over again, and the effects were astonishing.
 ‘ Another benefit attending it was, the plants
 ‘ were not so soon encroached upon by the
 ‘ grass, &c.’

And what were the causes of the effects which thus astonished *Mr. Billington*? The surface of the land was cleared by the cutting of the turf in the first instance, and the rotting of the grass and rubbish under it, in which the roots of the trees were placed, was neither more nor less than a fine vegetable manure. The work was done in rather a slovenly manner, but the land was in reality cleaned and manured, and the usual consequences followed.

To return to *Mr. Billington* :

‘ There can be no general rule for the size
 ‘ of plants, as that must depend on local cir-

‘ cumstances and peculiar situations. Upon
 ‘ all high and poor lands, where the grass or
 ‘ other herbage is not strong nor likely to be-
 ‘ come so after it is enclosed, strong plants,
 ‘ from twelve to eighteen inches or two feet,
 ‘ are the best size. In land of a *richer* quality,
 ‘ that abounds with *more* and *stronger* herbage,
 ‘ plants of four or five years’ growth, and from
 ‘ two and a half to three or three and a half
 ‘ feet high, ought to be planted ; and in *very*
 ‘ *low rich soils*, abounding with strong rank
 ‘ herbage, plants of a *larger* growth (excepting
 ‘ the fir-tribe) should be planted, and not
 ‘ small plants indiscriminately, as is generally
 ‘ the case when planted on contract by nur-
 ‘ sery-men’ [so that the better the land the more
 expensive the trees are to be]. ‘ Gentlemen
 ‘ are apt to suppose nursery-men understand
 ‘ more of planting than others ; but perhaps
 ‘ this is not a safe rule to be guided by, for it
 ‘ is not impossible but self-interest may some-
 ‘ times influence their opinions and recom-
 ‘ mendations. They may understand very
 ‘ well how to raise and manage plants in a
 ‘ nursery ; but when they come to be taken
 ‘ out, and planted in such opposite extremes

‘ of soils and situations, with their after management, I much question whether their knowledge is entirely to be depended upon, or is superior to that of others who may have had more practical knowledge.’

‘ By planting very small plants in such situations, a great loss of plants is frequently the case, as also the loss of time, which is of much greater consequence, when the plants do not live or thrive properly ; besides the great additional expense in clearing them from the rubbish, which would inevitably destroy or injure them. On these accounts the grass, weeds, or whatever else may present an obstacle to the growth, should be carefully cut away or beat down from the plants. If the plants are strong and large, they are easily seen, will not so soon be overtopped, and but little time need be lost in looking for the plants among the rubbish. A person may clear three or four large plants while he is looking for one of the small ones, which must make a material difference in the expense, besides allowing more time to do the work in before the herbage, whatever

‘ it may be, attains its full growth ; and generally, such work cannot be done all at once, but gradually, as the people employed get accustomed to it ; nor is it so well to set fresh hands on, nor should *very old* people be employed, when their *sight* begins to fail, for they may soon do more harm than good.’

Again, on the subject of pruning, *Mr. Billington* says—‘ When performing this work, I ordered the men to clear the grass from about the plants, to beat it down with the *hand* or hook, and to *look carefully* for them, as but few could be seen *without close examination*.’ In another part, page 189, he observes—‘ After planting, the utmost care should be taken to keep every plant as clear as possible from being encroached upon by long grass, fern, whins, broom, brambles, or any other thing that excludes the *light*, and prevents it making branches and leaves ; as, from what I have said and shall have to observe, I am strongly of opinion, almost to demonstration, that the *chief part*, if not *all*, the nutriment is taken in by the *leaves* of some kinds, and of course in a greater or less

‘ degree by all kinds of forest-trees. Care
 ‘ should therefore be taken, from the very
 ‘ first, to *cut or beat down* every thing around
 ‘ the plant; but *whins or heath* may be *neces-*
 ‘ *sary and useful* in cold situations, for a time,
 ‘ and at a little distance, so that the stem of
 ‘ the plant has free access to the *light*; but if
 ‘ it is close to the stems, the plants cannot
 ‘ produce leaves or branches, consequently
 ‘ cannot thrive, and the whins or whatever it
 ‘ is soon outgrow the plant, meet at the top,
 ‘ and exclude the light; of course they soon
 ‘ turn sickly and die if not relieved, par-
 ‘ ticularly those kinds of plants that are so
 ‘ long after planting before they make a shoot.
 ‘ I have seen plants of every kind, even the
 ‘ larch, totally destroyed in three years, from
 ‘ planting where whins and other herbage are
 ‘ thick and luxuriant. But the effects of neg-
 ‘ lecting to cut the whins, briars, thorns,
 ‘ broom, or such stuff, from among larches,
 ‘ are more destructive to them (if not totally
 ‘ killed) than to oaks, elms, and ash: these
 ‘ kinds, if not killed, may recover in some
 ‘ measure when the stuff is cleared away, by
 ‘ cutting it off or making fresh shoots from

‘ the bottom, but *the time that is lost cannot be recovered.*’

Further on he says—‘ When land addicted to whins or broom is planted with forest-trees, they may be *permitted to grow three or four years, and be of great use*, if care is taken the second or third year to go over them in summer, when the leaves are on them, with a hook, and cut the whins or broom from around each plant, which they are likely to smother. This must be done before the plants are hidden, so much more time being taken to look for the plants, which of course occasions a greater expense; a great object, when gentlemen understand and manage their own affairs, but it happens sometimes, when people manage others’ affairs, they are not so exact in these matters as if it was their own property.’

What arrogance and self-delusion!—to write a book about planting, to talk about the importance of ‘ early care and management,’ to doubt the qualifications of nursery-men for raising plantations, and in fact to insinuate

that few persons besides himself understand any thing about the matter. Why, *Sir Walter*, his opinions are more erroneous than yours, which is saying a great deal, and may be some ‘comfort’ for you to know. You deny the necessity of early care and management; but this superintendant of the planting of eleven thousand acres of land says, that *every thing* depends upon it: he gives us innumerable instances of the damage occasioned by long grass, fern, whins, broom, and brambles, and yet contents himself with recommending their being cut or *bent down with the hand or hook around the plants*; and that large trees should be planted, that they may be *easily seen, and no time lost in looking for them* among the rubbish. This surely beats every thing that was ever put into print. I have known people, who, like you, deny the permanent effect of early care and management, and others who, like the surveyor-general, thought that whins and broom were of ‘great use’ for a time; but never before did I hear or read of any one who admitted their destructive effects, and did not at the same time recommend their entire extirpation, which *among trees* can only

be effectually done with the spade or the fork. But this book of *Mr. Billington's* is a mass of contradictions. The following paragraphs would lead us to believe, that nothing short of trenching the ground and keeping it clean would satisfy him :

‘ I have noticed one particular instance,
 ‘ corroborative of what I have been explaining,
 ‘ which I think it right to state in this place ;
 ‘ on a particular spot of dry rich land, more
 ‘ than a acre, that had been overrun with
 ‘ some of these strong whins before alluded to,
 ‘ which had been cleared, and the whins burnt
 ‘ upon it, and had a single ploughing about
 ‘ eight months before it was planted, but no
 ‘ crop taken from it, the land as good as any
 ‘ upon the farm, and planted in the usual
 ‘ manner with the other land. On a part of
 ‘ this, the soil was taken off to the very gra-
 ‘ vel before it was planted ; and on this part,
 ‘ the larches and other plants, that were
 ‘ first planted, are all alive, healthy, and vi-
 ‘ gorous, particularly the larch, which is up-
 ‘ wards of six feet high ; whereas upon all
 ‘ the other part of that rich fine land there is

‘ scarcely a plant to be seen, *having been injured*
 ‘ *red and killed by the close rank whins and other*
 ‘ *herbage*, which have completely prevented
 ‘ the plants from making either leaves or
 ‘ branches; but where the soil was taken off
 ‘ there could be *little or no grass or whins* for
 ‘ the first year or two, and there the plants are
 ‘ alive, and growing vigorously as before no-
 ‘ ticed; but *such is the case in all places* aboun-
 ‘ ding with an overgrowth of whins, or any
 ‘ thing else that excludes the light, and room
 ‘ from the plants to make leaves and branches.
 ‘ But as this case was so striking, I thought it
 ‘ of importance to mention for the information
 ‘ of gentlemen who plant, and who might think
 ‘ such stuff necessary for shelter, and doing
 ‘ no hurt to the young plants, to show the er-
 ‘ rors and wrong ideas they may conceive or
 ‘ be led into, if not well understood or enqui-
 ‘ red after by themselves, and to convince
 ‘ them that merely planting, and leaving
 ‘ them to chance, is not the most beneficial
 ‘ way.’

Here *Mr. Billington* saw, that mere gra-
 vel when free from weeds produces better

trees than rich land which is overgrown with them ; and yet the necessity of keeping planted land perfectly clean did not occur to him. But let us see his further remarks, for they really have some sense in them, barring the blunder at the beginning :

‘ I have frequently seen, and noticed in
 ‘ this work, that the plants may *all be destroyed*
 ‘ in the second or third year after planting
 ‘ them ; and if they are suffered to remain in
 ‘ that state (vainly hoping to see them get above
 ‘ it) any number of years, say from ten to twenty,
 ‘ [vain indeed ! if they be all destroyed],
 ‘ then, instead of having plantations in the state
 ‘ I have shown it possible to have them, they
 ‘ have the mortification to see them *overrun*
 ‘ *with useless stuff*, or with a few illformed
 ‘ crooked trees, the land *to clear again and*
 ‘ *plant afresh, after the loss of so much valuable*
 ‘ *time.*’

‘ I have dwelt particularly on this subject,
 ‘ because I have met with people who positively assert and maintain, that what I have
 ‘ shown to be so injurious and destructive to

‘ plants is in so many ways necessary for shel-
 ‘ ter, and that they thrive the better for it.’
 [Mr. Billington seems to have forgotten, that,
 in several parts of the same book, he has re-
 commended the practice which he here con-
 demns.] ‘ It might appear unnecessary to al-
 ‘ lude to such evident facts, because I need
 ‘ only appeal to any person, who has an
 ‘ *onion-bed or a field of turnips*, what sort of a
 ‘ crop he would expect if he neglected to *weed*
 ‘ his onions or thin out his turnips, and that
 ‘ at a very early period; when he came to
 ‘ look at his crop at the end of the year, he
 ‘ would find himself miserably disappointed.
 ‘ *Just such is the case with forest-trees*; but as
 ‘ I have observed, there are people who main-
 ‘ tain the contrary opinion, and say that the
 ‘ plants will get up through all the stuff that
 ‘ overhangs and shades them: here and there a
 ‘ plant may get its head above it, but look at it
 ‘ when the stuff is cleared away from it, a tall
 ‘ dwindling crooked thing, without any side
 ‘ branches, and unable to bear its own weight,
 ‘ and is what may be termed top-heavy, has
 ‘ to be cut off at the root, and the ground to
 ‘ be planted over again to fill up all vacan-

‘cies, or have the ground only half stocked,
 ‘which is a great loss; I said half stocked,
 ‘perhaps not a quarter, and *all for want of a*
 ‘*little care and expense during the first few*
 ‘*years* after planting; for as *Dr. Franklin* ex-
 ‘presses himself—“All is lost for want of a
 ‘“little care at first;” and about what? Why
 ‘a thing as simple as the horse shoe-nail.’

All good so far, and now, *Sir Walter*, at-
 tend to the remedy prescribed.

‘To *prevent loss* and *insure success* to those
 ‘who plant either for pleasure or immediate
 ‘profit (and most people who plant, it may be
 ‘presumed, have one or both these objects in
 ‘view), I would strenuously impress the ne-
 ‘cessity of laying the ground dry where it is
 ‘necessary by draining, and raising the places
 ‘where the plants are to stand with a good sod
 ‘of earth, as I have before pointed out, which
 ‘will cause the ground to be much drier, and
 ‘will be done at *less expense than digging the*
 ‘*holes* previously: the success will be certain,
 ‘and no time lost, as is the case when the first
 ‘planted trees fail; because those used in the

‘ filling up the vacancies can never have so good
 ‘ a chance as the first planted ones, nor put in
 ‘ at so cheap a rate, owing to the grass, rank
 ‘ herbage, and other stuff increasing in strength
 ‘ every year after land is enclosed for planting:
 ‘ therefore, *the first expense is always the least*
 ‘ *if well done.* To this last opinion I most cor-
 dially assent; but pray, *Sir Walter*, observe
 what follows: ‘ Where the land is sufficiently
 ‘ dry and proper for planting, the ONLY THING
 ‘ NECESSARY *at first* is, to *beat down or cut*
 ‘ *away the grass, &c., around each plant*, wher-
 ‘ ever it is likely to overgrow and shade it, or
 ‘ grows so close that the plants cannot make
 ‘ side-shoots and leaves, till they are out of
 ‘ danger; and to attend to shortening the long
 ‘ straggling branches, and keeping them to
 ‘ one leader, as before explained. By such
 ‘ *care and management*, it is impossible to cal-
 ‘ culate the amount of the *early and certain ad-*
 ‘ *vantages to be derived from the practice here re-*
 ‘ *commended.*’

Any comment upon this is wholly unnecessary. The man who perceives, that plants are injured by being choked with grass or

other rubbish, and is yet weak enough to imagine that the mischief is to be remedied by removing the stuff from their stems ; the person who does not see, that the grass or whatever else it may be which occupies the land, draws the moisture and other nutriment from it, which the trees would otherwise receive, and that the only effectual remedy is to trench the land and prevent any thing from growing upon it except the trees : the planter who cannot see this, and yet acknowledges the injury arising from the grass and weeds, is a person not to be reasoned with, but must be left to follow his own obstinate course. The only cause for regret is, that the example of such a person, when not an author, is sometimes followed, and the injury is not entirely confined to himself ; but if any one, after reading *Mr. Billington's* book, should be induced to adopt his opinions, all I can say is, that such a person richly deserves to suffer all the loss and disappointment which he may experience, because the book itself contains abundant evidence to show the fallacy of those opinions.

The notion entertained by this gentleman, that trees derive their growth principally if not entirely from the *light*, and not from the soil, is really too absurd to deserve any thing in the shape of an argument to refute it. If this were so, trees, having equal light, would grow as fast upon *ordinary land as upon that of the very best quality*, and single trees would grow much faster than those in groves and woods, though the contrary in both cases is well known to be the fact.

I am indebted to a friend, to whom I submitted my manuscript for the following observation upon the above passage :

‘ That trees, as well as all other vegetables,
 ‘ derive a considerable portion of their nutri-
 ‘ ment from the air by means of their leaves,
 ‘ no one I believe in these days will attempt
 ‘ to deny. But if *Mr. Billington’s* argument
 ‘ is good for any thing, why is it confined to
 ‘ *trees*? As a necessary consequence, all the
 ‘ theories of agriculture relative to soil fall to
 ‘ the ground: the terms *good land* and *bad*
 ‘ *land* become sounds without a meaning.

‘ The air being so subtile, and in a constant
 ‘ state of locomotion, why should not the same
 ‘ field be continually planted with the same
 ‘ crop, with equal effect as when four conti-
 ‘ guous fields are kept in a constant rotation of
 ‘ crops, as in the usual course of husbandry
 ‘ adopted in this part of the country ?’

— A noble lord, to whom I communicated my opinion on the manuring of land for forest-trees, wrote me for answer, that it was a disputed point in natural philosophy, whether trees derived their nourishment chiefly from the soil, or chiefly from the atmosphere ; and that upon the solution of that problem the question would mainly depend, whether manure would be beneficial to trees. I gave a reply to this suggestion in my pamphlet ; and as it is equally applicable to *Mr. Billington’s* theory, I will here insert it :

‘ The success of a plantation almost entire-
 ‘ ly depends upon the trees being *well set off*.
 ‘ On good land this will be the case without
 ‘ any other assistance than trenching and
 ‘ cleaning ; but, on poor land, manure also is

‘ necessary. This will enable the plants to
 ‘ strike out numerous and vigorous roots, by
 ‘ which their food is obtained. I am aware
 ‘ that an opinion is entertained, that plants
 ‘ receive a considerable part of their nourish-
 ‘ ment from the air ; but if this be so, it can
 ‘ only be through the medium of their branches
 ‘ and leaves, as being so many channels or ve-
 ‘ hicles through which that nourishment is con-
 ‘ veyed or imbibed : and if manure increases
 ‘ the size and number of these branches and
 ‘ leaves, as it certainly does, it follows that
 ‘ plants are thereby furnished with additional
 ‘ means of obtaining food, it being obvious,
 ‘ that a tree with luxuriant branches must
 ‘ possess the power of taking up food from the
 ‘ atmosphere in a much greater degree than a
 ‘ feeble plant, with but little wood and few
 ‘ leaves ; and, therefore, manure is equally
 ‘ beneficial to plants, whether they derive
 ‘ their nourishment partly from the air, or
 ‘ wholly from the soil.’

I should here have taken my leave of *Mr.*
Billington and his book, but the following
 paragraphs in it bear so striking a resemblance

to what you have said on the same subject, that it almost induces a suspicion of your having imbibed your ideas from them. I should hope, however, that this is not the case. I should really be sorry to learn that you had ever seen *Mr. Billington's* book; for if, after reading his statement of the repeated failures in Dean Forest, arising from the adoption of and the obstinate adherence to the Scotch system of planting—if I could believe you were fully acquainted with all this, at the time of writing your Essay, it would be impossible to acquit you on the score of ignorance. I must suspect, that seeing the attention of the public had lately been strongly excited to the subject of planting upon scientific principles, and that the state of the public forests would probably be enquired into, you had put forth your Essay with the view of inducing ‘the lords of the soil’ to believe, that the style of planting there pursued was that which ‘produced the ‘most profit, and was executed at the least ‘expense;’ and, consequently, that no blame was imputable to those who have had the management of this valuable part of the national property. If you have never read *Mr. Bil-*

lington's book, I most humbly apologize for the observations which I have just made; but if you had read it before the publication of your Essay, it will require a pen, more persuasive even than your own, to remove the suspicions which must be entertained of the motives, which could induce a man of your transcendant ability to give currency to such manifestly erroneous opinions on so important a subject. Now for the paragraphs—

‘ As vast sums of money are often expended in *trenching* the ground, and *making holes* for planting, which might deter many from the attempt who have but little money to spare for the purpose, and who think the plants will not succeed without such preparation, by digging a hole and putting a plant in (if not too large), at the same time keeping the grass side uppermost, particularly if the ground is wet, answers the same purpose as making great holes before the time of planting, as oftentimes a very large hole is made for a plant with a very small root; but whichever way is practised, the work should be well performed. Therefore when there is

‘ no visible advantage, the most expeditious
 ‘ and cheapest method ought to be adopted,
 ‘ where the saving of expense is an object.

‘ Trenching the ground no doubt is of con-
 ‘ siderable advantage to young plantations, if
 ‘ they are regularly attended to for some years
 ‘ afterwards, to keep down any weeds and
 ‘ filth that may get up, by hoeing or any
 ‘ other method; but as it is attended with a
 ‘ very serious expense in the first instance and
 ‘ a continual one afterwards, *if kept clean as it*
 ‘ *ought to be, to derive the supposed benefit from*
 ‘ *it*, otherwise the expense would be thrown
 ‘ away, there are but few persons who can
 ‘ adopt that plan to any great extent, and a
 ‘ good deal of damage is often done to the
 ‘ plants by the hoeing, and *growing of crops*
 ‘ among the plants where that is adopted, as
 ‘ the *crops, if luxuriant*, will have the same ef-
 ‘ fects upon small plants as weeds and other
 ‘ filth.

‘ For shrubberies and small plantations
 ‘ near to a house, where a plantation is re-
 ‘ quired *quickly*, it may be necessary; but

‘ following the plan I have recommended and
 ‘ pointed out, would obviate all this *useless* and
 ‘ *additional expense*, if proper care is taken for
 ‘ a few years at first to go over once or twice a
 ‘ year, as occasion may require, to beat down
 ‘ or cut away all grass or other rubbish from
 ‘ around each plant, and to give an occasion-
 ‘ al pruning when necessary. If the ground
 ‘ should be hard or very sterile, to put a *little*
 ‘ *better earth* to the *roots* of the *plant* at the time
 ‘ of planting, to facilitate its establishment in
 ‘ the ground, which is of material importance,
 ‘ would save a great expense, and in most
 ‘ cases answer the same purpose.’

What is this but manuring after its own kind, and by no means a cheap method if practised on an extensive scale?

I submit, that I have already stated enough to prove beyond contradiction, that the Scotch system is attended with considerable expense, and is productive of much loss, disappointment, and mortification. I have also established both in this and in my former pamphlet, that by properly preparing the

soil previous to planting and keeping it clean afterwards, success, and a large and early profit, may be rendered certain. I have also therein proved the powerful and profitable effects of manure, when applied at the planting of poor land. The facts therein stated, and the conclusions to be drawn from them, cannot in truth be contradicted or denied. I need not therefore add any thing further on the subject; but I cannot help observing, that another year's growth of the trees referred to in my former pamphlet (since the publication thereof) has fully confirmed the correctness of all my former statements. The trees, where whins, heath, and rubbish abound, have literally made no improvement, for what has been gained by some has been lost by the death of others; while those which are planted upon prepared soil have made considerable progress, and those which had the benefit of manure have not only maintained but increased their superiority, over those planted at the same time which had not that advantage: and so far from there being any likelihood that all difference between them will disappear at the end of ten or twelve years, it is quite cer-

tain it will be greatly increased in every succeeding year. If *Mr. Billington* will come here, he will find that ash, elm, &c. are not always several years before they ‘so take to the soil as to make any progress,’ and that it will not be as he says ‘from seven to eight years before they begin to grow.’ I can show him both oaks and ashes, which were planted in 1824, about eighteen inches or two feet high, which increased three feet in the last season, and are now full nine feet in height, and black Italian poplars twelve and fourteen feet high; and, what is remarkable, that though the situation is exposed to the north, and is within two miles of the German ocean, the Scotch firs planted with them are not more than four and five feet high: but the ground was trench-ploughed and manured at the time of planting, at the expense of seven pounds fifteen shillings per acre exclusive of the trees, and is now as clean as a garden. No whins or broom were permitted to grow three or four years for the sake of shelter; no fern six and seven feet high was allowed to shade them from the sun in summer, nor to overwhelm and crush them with the

weight of snow in winter ; no rank grass or herbage was suffered to smother or choke them ; and no glasses were requisite for discovering them. No, sir : they have been the sole possessors of the soil, without a weed to rob them of their food, or otherwise to check them in their growth ; and as you allow trees to be sensible of and grateful for the kindness they receive, they have shewn their gratitude for the care and attention bestowed upon them, by sending forth the most luxuriant shoots and branches, affording unspeakable gratification to him by whom they were planted, and great delight to all who behold them.

I cannot conclude this part of my subject, without mentioning the plantations made by *Mr. Coke* upon the Quarles farm near Holkham park, as they afford another irresistible proof of the beneficial effect of properly preparing the soil, and keeping it clean afterwards, and also confirm my opinions with regard to manure. These plantations were made in 1824, upon part of the cultivated land belonging to the above farm ; and although no manure was applied at the time of planting, yet

the land, in consequence of previous manuring and fallowing, was in much better condition than mere waste land usually is when planted even with manure. I saw these plantations for the first time in the month of September last ; and as I had been on the farm only a short time before they were planted, I certainly was greatly surprised to find that such fine trees had sprung up in so short a period. They are chiefly of the deciduous kinds (for *Mr. Coke* does not, any more than myself, see the necessity of planting firs for nurses upon prepared land), and exhibited a degree of health, vigor, and luxuriance of growth, which it is in vain to look for when the Scotch system is adopted. I did not go into the plantations to examine the trees ; but from the observations I made from the road, I believe that most of them, and particularly the ashes, had made shoots that season from three to five feet in height. Another plantation, made by *Mr. Coke* at the same time on the east side of the park, has also made very considerable progress ; and here, *Sir Walter*, you may see a fair trial between the two systems. One of *Mr. Coke's* friends had imbibed the

northern principle on the subject of cheap planting, and was of opinion that grass and weeds would be beneficial rather than injurious to the trees, as they would 'keep them warm, and also keep out the drought: they would in fact be a source both of heat and moisture.' No *reasoning* could make any impression on this gentleman; and therefore, after planting this land in the park, *Mr. Coke* (to give him ocular proof) allowed the grass and weeds to grow in small strips in different parts, whilst all the rest was kept under the hoe. The contrast is indeed most striking. Here we see the trees in the unhoed strips choked up with weeds and grass, having made scarcely any progress, while the others are nine or ten feet high if not more. The strips in fact, resemble drives or roads in the plantation, and at a short distance no one would imagine that they had been planted. The gentleman is at length convinced, and the strips are now called by his name. He has, however, suffered pretty severely for his attachment to the Scotch system; for, in the same year in which the above plantation was made by *Mr. Coke*, he planted rather largely

upon your cheap plan, and has now the mortification to find that his plantation is an entire failure.

I will not repeat here the arguments urged in my former pamphlet, to show the advantage of *manure* or the necessity of keeping planted land free from weeds, and the surface in an open and loose state by frequent hoeings; but I will give an extract from a letter which I received in December, 1826, from that intelligent writer, *Mr. Cuthbert William Johnson*, on the subject :

‘ The value of hoeing and manuring timber-plantations, which you have so successfully illustrated, appears to me to admit of little doubt; for you will find by reference to the first pages of my Essay on Salt, that I there contend, that a proper supply of moisture and atmospheric air are the chief supports of vegetable life, and I have laid much stress by way of illustration upon the growth of timber-trees. To contend, therefore, that an iron-bound soil, covered with weeds intercepting both air and moisture, is not pre-

‘ judicial to the growth of trees, appears to me
 ‘ to be too absurd to be made more so by
 ‘ needless argument.

‘ It has been demonstrated by *M. Saussure*,
 ‘ that the roots of plants absorb from the at-
 ‘ mosphere oxygen gas, which they convert
 ‘ into carbonic acid gas, and transmit to the
 ‘ leaves to be decomposed. Hence vegetation
 ‘ is found to be greatly benefitted, if water,
 ‘ impregnated with oxygen gas, is used for
 ‘ them : hence too the superiority of rain-water.

‘ *Mr. Hall* has lately made known some
 ‘ remarkable experiments, demonstrative of
 ‘ the great benefit plants derive from oxygen
 ‘ gas being applied to their roots. Hyacinths,
 ‘ melons, Indian corn, &c., were the subject
 ‘ of the experiments. The first was greatly
 ‘ improved in beauty, the second in flavour,
 ‘ the last in size, and all in vigour.

‘ Hence one great use of a proper supply
 ‘ of moisture ; for *M. Humboldt* has clearly
 ‘ shown, that a dry soil is quite incapable of
 ‘ absorbing oxygen gas.

‘ A finely divided state of the soil, therefore, promotes vegetation, by allowing a freer circulation of the atmospheric moisture and oxygen gas. I am rejoiced to hear that you have used salt, and mean to persevere in the investigation. I have merely alluded to its probable use for timber-trees in my Essay, p. 96. It cannot fail to be highly useful: it will keep the ground moist and clean, it will destroy parasitical insects which prey upon the tree, and *Darwin* would have said—“ It will stimulate them.”

‘ In the cider-counties, since the repeal of the salt-tax, they have been again salting their cider-orchards, as their forefathers did before them. I have no doubt too, that the use of salt, combined with soot, would produce very great results in your plantations.

‘ I would certainly advise you to renew the top-dressing of salt: say four or five bushels per acre. Twenty bushels per acre was certainly a fair quantity for an experiment; but I am always an advocate for trying different quantities, as much more depends upon va-

‘rying the quantity according to the soil,
 ‘ &c., in all agricultural experiments, than is
 ‘ commonly imagined.’

I have also lately received a letter from a respectable land-owner in Kent, of which, as it affords another proof of the utility of manure, I will give an extract:—‘ I decidedly
 ‘ agree with your method of planting and
 ‘ manuring, as preferable to the system in
 ‘ general practice, which I have no doubt will
 ‘ soon be entirely exploded. I have a tenant,
 ‘ that planted about an acre of land with ash
 ‘ plants in 1820. He ploughed the ground
 ‘ once about ten inches deep, and planted by
 ‘ digging small holes in the old way. There
 ‘ happened to be two stacks of old hop-bines
 ‘ standing upon the field, partly decayed; and
 ‘ these he threw about the ground, just around
 ‘ the place where they happened to stand.
 ‘ The plants upon these patches are now about
 ‘ fourteen or fifteen feet high, and the other
 ‘ part of the plantation about six or eight feet
 ‘ high. He also dug between the plants of
 ‘ a small corner that was planted about six
 ‘ years before, with plants three feet high.

‘ These had not made more than six inches
 ‘ shoot, the best of them, in all that time.
 ‘ He manured these with old hop-bines, three
 ‘ years since, and they are now about eight or
 ‘ ten feet high and look healthy. He still
 ‘ continues the system, and with the same
 ‘ success. I planted, in November, 1825, up-
 ‘ on ground trenched two feet deep, a few lo-
 ‘ cust trees then about three feet high. Some of
 ‘ them I cut down in the spring of 1826, close
 ‘ to the ground. They are now I find, as fol-
 ‘ lows; viz. one nine feet high and four in-
 ‘ ches girt, one ten feet five inches high and
 ‘ three inches girt, and another ten feet nine
 ‘ inches high and two inches and a half girt—
 ‘ the girt taken at two feet from the ground.’

If I were to cite all the authorities, urge
 all the arguments, and state all the facts,
 which could be brought forward in support of
 my position in page 6, that trees planted
 upon prepared land will grow faster, and
 come much sooner to maturity, than trees
 planted upon the Scotch system, the present
 pamphlet, which when I began it was inten-
 ded as an article for one of the magazines,

would extend to as many volumes as your *Life of Napoleon*. Having therefore, I conceive, clearly established this position, I will now proceed to the remaining branch of our enquiry, and endeavour to show, that the expense of preparing and manuring the soil previous to planting, and of keeping it clean afterwards, is amply compensated by the increased growth of the trees.

My opinion is, and it is in a great measure borne out by the statements extracted from *Mr. Billington's* book, that the Scotch system, if you keep continually filling up the vacancies as they occur, is in the end by far the most expensive. That such would prove to have been the case in Dean Forest I have no doubt, if all the accounts were produced; and I do hope that some member of parliament will move for them in the early part of the ensuing session. In my own case and that of *Mr. Hardy* referred to in my former pamphlet, while we planted upon the pitting or hole-digging system, the expense of mending and filling up was considerably more than it would have cost to prepare and plant the land properly in

the first instance; and I am certain, that the other plantations in the neighbourhood also referred to must have required a still greater proportion of expenditure to cover their deficiencies. If the vacancies be not filled up, the plantation will finally consist of the fir-tribes, and principally of the base Scotch, as you call it; for the deciduous trees and even larch will perish, or can never come to perfection, when choked up with weeds and rubbish; and of these firs there will not be half a crop, that is, assuming that a proper assortment of deciduous trees was originally planted with them. And what, after all, will be the value of these vile Scotch firs? The country is now overstocked with them, and in a few years they will scarcely pay the expense of cutting them down for fire-wood.

Here then I might rest my case, and contend, that upon your system, you can only obtain half a crop of worthless firs, or that you must incur an annual expense, which, with the first cost, will in the end amount to more than my original expenditure. But it is not necessary for me to do this to the full

extent. I may allow that your cost amounts to only three pounds ten shillings, while mine exceeds fifteen pounds an acre; and yet I shall be able to show, that the superior growth of my trees will yield an early and certain profit to a considerable amount, while yours will be productive of great loss. I have lately published a Table, in which this is I think made clear and manifest. I have assumed that trees, planted upon land trenched, manured, and kept clean, will annually increase at the rate of fifteen inches in height, and one inch and a half in circumference at the base: and that trees planted upon the Scotch system will increase only six inches in height, and half an inch in circumference. I have also assumed that, in both cases, the money is borrowed to purchase, fence, and plant the land, and also to pay the annual interest, so that it is a complete compound interest account on both sides. The results are in the former case, that, at the end of the thirty-ninth year, the whole of the debt will have been cleared off, and three pounds eleven shillings and two pence per acre in hand from the thinnings to that time; and, consequently, that

the land, and the crop then upon it, will literally have cost nothing. In the forty-third year, the thinnings will amount to forty-one pounds twelve shillings per acre, in the forty-seventh year to fifty-four pounds fifteen shillings, in the fifty-first to sixty-four pounds seven shillings, in the fifty-seventh to one hundred and eleven pounds two shillings and six pence, and in the sixty-third to one hundred and twenty-eight pounds; and the crop then upon the ground will amount to six hundred and forty pounds. All these, with the thinnings to the thirty-ninth year, with the compound interest, will amount to the enormous sum of one thousand three hundred and five pounds nine shillings and eight pence,* derived du-

* *Note* by a friend.—‘ This sum is about worth the
 ‘ amount of an annuity of three pounds, at five per cent.
 ‘ per annum compound interest for sixty-four years, or
 ‘ more than thirteen and a half per cent. per annum pro-
 ‘ fit upon the sum expended within the first seven years,
 ‘ making a total interest upon that sum of upwards of
 ‘ eighteen and a half per cent., besides a rent equal to
 ‘ five per cent. upon the value of the land planted, which
 ‘ is near two per cent. more than a purchaser usually ex-
 ‘ pects to make by investing money in land.

‘ I consider this cost to be—

ring sixty-four years from the judicious planting of one acre of land, being at the rate of upwards of twenty pounds per annum during the whole period; while, upon the Scotch system, for the same period, the loss would actually amount to two hundred and seventy-three pounds ten shillings and five pence an acre.

I am aware that it will be objected, that, in all cases, the probable results cannot be ascertained by figures. This I admit; but it is further objected that the trees upon my system will not grow so fast, and those upon the Scotch system will grow faster; than I have estimated. This I will not admit so far as regards the growth of trees upon prepared soil, for there are I believe numerous instances in which that growth has been exceeded. At all events there is one proof in the plantation made by the late *Mr. Windham*, referred to

‘ Original expenditure £16 5 0

‘ Present value of one pound per annum for
seven years, being the expense of keep-
ing clean,

5 16 0

22 1 0

in page 30, the trees in which have increased far beyond my estimate.

As to the estimated growth upon the Scotch system when adopted in England, I do not think I am much if at all below the mark; for although the trees will in some cases make more wood than I have allowed, there will from failures be not above half the number to take out, so that what is gained in one way will be lost in another: and with regard to the particular plantation on which my estimate was formed, I am quite certain that, without a very considerable expense in filling up vacancies for many years, it can never equal what I have allowed. But it is not necessary, for the sake of the argument, to show that so great a loss will be sustained as my table exhibits; for if I admit that, upon the Scotch system, there will be merely a loss of profit, or even that there will be a profit to the amount of three or four hundred pounds, instead of one thousand three hundred pounds an acre which my system produces, the superiority of the latter over the former is sufficiently obvious to ensure it a preference with

all planters, who are desirous of laying out their money to the best advantage. One great object which I have in view is to show, that a comparatively trifling annual increase in the growth of trees makes a prodigious addition to the quantity of timber. You may not perhaps be aware, that a tree, which increases annually eighteen inches in height and two inches in circumference, will make six times as much timber as a tree which increases only twelve inches in height and one inch in circumference; but that such is the fact, you may see on reference to the tables of *Mr. Waistell* appended to my former pamphlet. For instance, a tree thirty-six years old will, at the latter rate of growth, contain only five feet and nine parts of an inch of timber; while at the former rate it will, at the same age, contain thirty feet four inches and six parts.

How important then is it, in a profitable point of view, to accelerate the growth of timber! and how trifling and insignificant does the additional expense appear, when compared with such results!

It appears to me, that you, and other advocates of cheap planting, have fallen into a strange mistake in imagining that the greatest profit is the necessary result of the smallest expenditure. I do not believe that this is true in any case, but the reverse, where money is expended with judgment; and it certainly is not correct as applied to any of the productions of land requiring any expenditure whatever. A pretty return of profit a farmer would make, who acting upon this principle, should content himself with giving his land intended for turnips one ploughing instead of four, with putting on five loads of muck instead of fifteen, and afterwards neglecting to hoe the plants on account of the expense. What would be thought of a hop-grower, who, on the score of economy, refused to lay out more than ten pounds instead of forty pounds an acre in dressing his land, and otherwise properly preparing for and managing his crop? or of a gardener, who, having put his seeds into the ground, neglected from the same motive to eradicate the weeds which were sure to destroy his plants? Just as reasonable would it be for persons so acting to

obtain a profit, as it is for a planter who refuses to lay out such a sum as is required to promote the growth of his trees, to expect as much gain as a person, who expends enough to ensure the greatest possible produce.

To show the gross absurdity of this doctrine, it is only necessary to follow it up to its utmost extent. Why expend even ten pounds, or any thing beyond the labour necessary for gathering the crop? Why manure or plough at all? The least possibly expensive system of farming would surely be, merely to throw upon the ground the seed of whatever crop you were desirous of obtaining.

Another error into which you and others have fallen is, as to the *extent* to which planting should be carried by individuals. It seems to be taken for granted, that, because a gentleman may possess large tracts of waste land fit for nothing but planting, he ought to plant the whole of it, although he has not sufficient means to do it all properly. *Mr. Fleming*, the editor of that useful and valuable miscellany, ‘The British Farmer’s Magazine,

in reviewing my Table, enquires—‘ In the
 ‘ case of Scotch and Irish estates, consisting
 ‘ of thousands of useless acres, where is the
 ‘ sum of sixteen pounds per acre for dress and
 ‘ labour, &c., to be found? Nay, where is
 ‘ even the dress to be found in those inacces-
 ‘ sible regions ?’

This I submit is not a fair way of putting the question ; for where, I ask, is the necessity for a proprietor’s planting *all* the waste land he possesses, unless his means allow him to do it effectually ? Why apply, over a large tract of country, that expenditure which might be more profitably employed on a smaller space ? Why expend upon eight acres the sum which ought to be confined to two ? PROFIT, and profit alone, in this view of the subject, ought to be the object of the planter ; and if that object can be more effectually secured by laying out sixteen pounds for instance upon one acre of land, than by expending it upon four, why should not the owner confine his operations to that single acre, and leave the remaining three to be improved at some future time, as circumstances

might permit? The bare fact of planting at all implies the possession of money to some amount, wherewith to defray the expense; and the only question is, or ought to be, in what manner that money can be laid out to the greatest advantage of the planter, and not the number of acres on which he can squander it away, for such in reality is the case when it yields no profitable return.

The friend before alluded to has furnished me with the following illustration of the foregoing proposition—

‘ Suppose, for example, the owner of a thousand acres of waste to be desirous of improving his estate by planting. With *proper economy*, as it is called, he may, for the sum of four thousand pounds, ensure a plantation, which, at the end of a long life, shall be worth all the money expended, together with the accumulated interest and rent, *provided the fee-simple of the land be not worth more than thirty shillings the statute-acre.*

‘ Value of the land	£1	10	0
‘ Fencing, being on so large a scale ..	0	10	0
‘ Trees and planting	3	10	0
	<hr/>		
	5	10	0
	<hr/>		

‘ Or twelve pounds per acre less than the esti-
‘ mated cost, according to the second part of
‘ the table : this sum, at five per cent. com-
‘ pound interest, will, in sixty-four years,
‘ produce two hundred and seventy-two
‘ pounds nine shillings and three halfpence,
‘ which will nearly balance the loss there
‘ shown. I will not here stop to enquire, whe-
‘ ther trees on this thirty-shilling land, with-
‘ out preparation, will grow even so fast as al-
‘ lowed by the table : it is enough for my pre-
‘ sent purpose to prove, that there is nothing
‘ gained by them.

‘ Another expends the same sum upon one
‘ hundred and eighty-six acres of similar land,
‘ in fencing and carefully preparing the soil,
‘ and afterwards keeping his trees free from
‘ weeds :

‘ Fencing, being on rather a large	
‘ scale though not equal to the for-	
‘ mer, at nearly double	£0 19 0
‘ Other expenses according to the ta-	
‘ ble.....	14 15 0
‘ Present worth of one pound per an-	
‘ num for seven years, to be expen-	
‘ ded in cleaning	5 16 0
	<hr/>
	21 10 0
	<hr/>

‘ At the end of the same period, this man
‘ shall not only have realized the amount of his
‘ expenditure with interest, but shall actually
‘ be in possession of property, equivalent to
‘ a rental during the whole period of three
‘ pounds thirteen shillings and nine pence
‘ halfpenny per acre on the part planted,
‘ which is equal to a rental of thirteen shil-
‘ lings and eight pence halfpenny per acre on
‘ the whole thousand acres, supposing the
‘ other eight hundred and fourteen acres to
‘ be utterly worthless; or of fourteen and
‘ sixpence, supposing them to be worth only
‘ one shilling per acre as sheep-walk. Deduct
‘ eleven shillings from the estimated expense
‘ of fencing according to the table, and, toge-
‘ ther with the cost of the land, it will reduce

‘ the original expense thirteen pounds one
 ‘ shilling per acre. This sum in sixty-four
 ‘ years will amount to two hundred and nine-
 ‘ ty-six pounds five shillings and eleven pence,
 ‘ which, added to the sum of one thousand
 ‘ three hundred and five pounds nine shillings
 ‘ and eight pence profit, amounts to one thou-
 ‘ sand six hundred and one pounds thirteen
 ‘ shillings and seven pence, equal to an annu-
 ‘ ity for sixty-four years of three pounds thir-
 ‘ teen shillings and nine pence halfpenny at
 ‘ five per cent. compound interest.’

Then, as to the dress or manure, *where*,
Mr. Fleming enquires, is it to be found in
 those inaccessible regions? I know nothing of
 either Ireland or Scotland, and therefore can-
 not answer this enquiry in the manner I could
 wish, and I take this opportunity of stating
 most distinctly, that my observations, as to
 the necessity of preparing the soil for trees, are
 meant to be confined to that part of the uni-
 ted kingdom in which I reside: but I must
 remark, that where there is a *will*, there is al-
 most always a *way*; and if the proprietor be
 really desirous of manuring his land for trees,

he may in most cases find something that will answer his purpose. In the first place, the land intended for planting is generally covered with moss, heath, or whins, which, by being pared and burnt and converted into ashes, will furnish a useful and unexpensive manure upon the spot. Clay or marl is to be found in most places, and may be barrowed or carted upon the land after it is trenched or ploughed, or ashes may be burnt therefrom. If in the neighbourhood of a port or navigation, bone-dust or salt may be had in any quantity. In short, there is always something to be procured in the shape of manure, if the planter be desirous of obtaining it. But if none can be had, there will I presume be no difficulty in finding plenty of labourers with spades and picks in the their hands to turn over the soil, and make it ‘ loose and penetrable.’ The ‘ easy practicability of this most *effectual* method,’ and the certain profit thereof, I have already shown; and to cite your own words, ‘ if it be only undertaken boldly and ‘ upon a large scale by the persons principally ‘ concerned, will be found as advantageous to ‘ the poor as the rich; providing for the over

‘ population as it is called a hardy and health-
 ‘ ful occupation, the object of which is the im-
 ‘ provement of their native country, while the
 ‘ manner in which it is conducted is equally
 ‘ favourable to their comforts and their mo-
 ‘ rals.’

The foregoing calculations of the profits of planting, upon my system, are made upon the supposition, that the plantation is to consist of oak, ash, and Spanish chesnut; but this profit would be very considerably increased by planting the *locust* tree in preference to all others. The reader may be convinced of this, by referring to No. 9 and 10, vol. 48, of *Mr. Cobbett's Register*, in which he enumerates, and gives undeniable *proofs* of, the very durable and other superior qualities, and the rapid and extraordinary growth of this invaluable tree.

‘ The durability of this wood,’ says *Mr. Cobbett*, ‘ is such, that no man in America
 ‘ will pretend to say he ever saw a bit of it in
 ‘ a decayed state. It is absolutely indestruc-
 ‘ tible by the powers of earth, air, and water.

‘ Its strength far surpasses that of our spine-
 ‘ oak. It is to this timber that the American
 ‘ ships owe a great part of their notorious su-
 ‘ periority to ours. The stanchions round the
 ‘ deck are made of locust ; and, while nothing
 ‘ like the bulk of stanchions of oak, will resist
 ‘ a sea three times as heavy as oak will. The
 ‘ tiller of the ship is made of locust, because it
 ‘ demands great strength and is required not
 ‘ to be bulky. For the same reason, the mar-
 ‘ tingales of ships are made of locust. The
 ‘ locust is rather a rare timber in America ;
 ‘ but sometimes the *futtocks*, or ribs of ships,
 ‘ are made of locust ; and if a ship had all its
 ‘ ribs, and beams, and knees of locust, it
 ‘ would be worth two common ships. Fur-
 ‘ ther, as to ship-building, that important ar-
 ‘ ticle, the TRUNNELS, when they consist of
 ‘ locust, make the ship last probably twice as
 ‘ long as if the trunnels consisted of oak.

‘ But, important as these matters are,
 ‘ these are by no means to be compared to
 ‘ the various uses about *buildings* and fences.
 ‘ I have said that this wood is indestructible
 ‘ by the elements, except that of fire. How

‘ many thousands of houses are rendered use-
 ‘ less in England, every year, by that thing
 ‘ which they call the dry rot, proceeding sole-
 ‘ ly from those villanous soft woods which
 ‘ impatient people take such delight in plant-
 ‘ ing, and which carpenters of a delicate con-
 ‘ stitution take such delight in sawing and
 ‘ planing ! English spine-oak is stronger than
 ‘ deal, and if you keep it dry it will not rot ;
 ‘ but let it lie in the wet or damp, and let the
 ‘ air get at it at the same time, and no villan-
 ‘ ous deal will turn to earth more quickly.
 ‘ Window-sills of the best of oak will rot, if
 ‘ something be not done to keep away the wet
 ‘ from getting under them ; and in this very way
 ‘ the dry rot has got into many a house. Oak
 ‘ door-sills are rotten in a very short time.
 ‘ The ends of beams and of joists, if they rest
 ‘ upon bricks or stone where the moisture is
 ‘ constantly about them, rot in a few years.
 ‘ The points of rafters, and the pins which
 ‘ hold rafters together, are always rotting.
 ‘ If these things were made of *locust*, your
 ‘ house would be safe for ages. Every where,
 ‘ when you want something to be sopping in
 ‘ the wet, and at the same time to be exposed

‘ to the air, you should have *locust*. Endless
 ‘ are the uses to which it might be put: a bot-
 ‘ tle-rack, for instance, that you want to stand
 ‘ out of doors, and hidden in some corner, a
 ‘ grindstone-stand, a horse-block, but particu-
 ‘ larly a cart-house, or any thing that requires
 ‘ pillars, the bottoms of which are to go into
 ‘ the ground. Go to any farm-yard in Eng-
 ‘ land (I do not care what farm it is), and you
 ‘ shall find in the cart-house one of these
 ‘ things; first, the posts which support the
 ‘ building rotting off very fast just where they
 ‘ meet the ground; second, those parts rotted
 ‘ off and cut off, and some stones put under
 ‘ them, to the manifest risk of the cart-house;
 ‘ third, the cart-house actually tumbling down
 ‘ in consequence of the rotting of the posts.
 ‘ This is notorious—every farmer, every land-
 ‘ lord in the kingdom knows it. What a
 ‘ plague it is! little locusts trees, only about
 ‘ seven years old, would, for these purposes,
 ‘ make posts that would last for ever. Every
 ‘ one knows how the sleeper (as I think they
 ‘ call it) rots; that is to say, the piece of wood
 ‘ that goes along at the bottom of each side of
 ‘ the stall. We know also, how the manger-

‘ posts rot off at the ground. Use locust timber, and it will wear out the stone walls of the buildings.’

Mr. Cobbett gives many indisputable proofs of the imperishability of this tree, when used as stakes and posts, and exposed to continual or occasional wet; and some of the stakes and posts themselves are now, I believe, to be seen at the office of the Register, 183, Fleet-street.

‘ The fact, then, of the durability of this wood,’ says *Mr. Cobbett*, ‘ is here put beyond dispute. If it last sound as a post out of doors for more than a hundred years, it may be fairly said to last for ever. If it will make axletrees for a waggon, after having lain as a barn-sill in the wet and dirt for forty years, it may be fairly said that it will yield to nothing but fire. This tree has no sap. It is all of the same quality, and *Judge Lawrence* showed me some with the bark on perfectly sound, after having stood more than twenty years. It is all spine. It is just as hard when as big round as your wrist, as when it is as big round as your body.

‘ Here are hop-poles, then ! Here is the stuff
 ‘ to make hurdle-gates for sheep-folding !
 ‘ Here is stuff for clothes-posts and all sorts of
 ‘ uses ! A locust hop-pole, when once point-
 ‘ ed, would serve, and that too without any
 ‘ more pointing, for half a century. At Fleet-
 ‘ street there is one of the stakes which I men-
 ‘ tioned above, and which I brought from the
 ‘ farm of *Judge Mitchell*. Whoever looks at
 ‘ this stake will see that it was a mere branch,
 ‘ and a crooked and poor one too, cut off from
 ‘ a tree ; yet it lasted as a stake for thirty
 ‘ years, and is now as hard and as solid as it
 ‘ was on the day that it was cut off the tree.’

Many will say, that these trees will not
 grow in England ; but all doubts upon the
 subject must be removed on perusal of the Re-
 gisters from which I have taken the above ex-
 tracts. *Mr. Cobbett* there gives an account of
 locust trees grown by himself, and which are
 now to be seen at his former residence at Bot-
 ley in Hants. The average height of some of
 these trees, at only *fourteen* years old, was
thirty-six feet seven inches ; the average bigness
 round at bottom *two feet four inches*, and at

twelve feet *one foot five inches* ; and the average diameter *more than seven inches*. These trees were growing upon a *poor gravelly* soil ; and there was one tree, planted upon a better soil, which, at *eleven years' growth*, measured *forty feet* high, *three feet and two inches* round at the bottom, and its two limbs, *twelve feet* from the ground, *just the same bigness*. Well might *Mr. Cobbett* exclaim—‘ Did any one ever
 ‘ know or hear of a growth of timber-trees
 ‘ equal to this, and particularly of wood ten
 ‘ times as good as spine-oak ?’ The profits of this wood, to be cut down merely for hop-poles, he estimates at upwards of six hundred pounds an acre in twenty-one years ; and I firmly believe, that upon a soil *well prepared*, though not of the best quality, a profit nearly if not equal to this may be realised, having myself had shoots of this tree ten and eleven feet high in one year. ‘ The time will come,’ says *Mr. Cobbett*, ‘ and it will not be very distant, when the locust tree will be more common in England than the oak : when a man
 ‘ will be thought mad if he use any thing but
 ‘ locust in the making of *sills, posts, gates, joists, feet for rick-stands, stocks and axletrees*

‘ *for wheels, hop-poles, pales, or for any thing
where there is any liability to rot.*’

I have stated sufficient to show the great advantage and profit of planting the locust, and for further information I must refer to the Register, or to *Mr. Cobbett's* forthcoming book, called ‘*The Woodlands,*’ in which he will doubtless introduce the minutest particulars regarding a tree, the valuable qualities of which he has the merit of making generally known in this country; for although *Miller*, and *Dr. Hunter* in his edition of *Evelyn's Sylva*, both speak of the great durability of this wood, no one ever thought of planting it except for ornament, until he wrote upon the subject in 1823. Since that time millions of the tree have been planted, and its valuable properties are daily becoming more generally known.

I should here have concluded my observations, had I not been strongly urged to make some remarks on other subjects connected with planting, which are treated of in your Essay. I allude to the distance at which trees

should be planted from each other, and to the pruning and thinning of plantations. Upon each of these subjects a great contrariety of opinion exists. Much, as you observe, certainly depends upon circumstances; but with regard to the first-mentioned subject, namely the distance at which the trees should be planted, my own opinion is, that, upon good land trenched and kept clean, and upon inferior land where manure is added, the trees are generally planted too close at four feet apart, or two thousand seven hundred and twenty-two upon an acre. Upon land so prepared and managed, *nurses* are not wanted in *any situation*, and more especially the Scotch firs, which as I have shown in my former pamphlet, will always be outgrown upon such land by oaks, ashes, and all the hard wood tribes. I would therefore reject the Scotch firs in all cases, and even the larches as *mere nurses*; and if trees be not required to stand thick for the purpose of drawing each other up, as it has been proved over and over again they are not upon well prepared land, it is a sheer loss, and a considerable one too, to be at the expense of purchasing one thousand

five hundred trees an acre more than are wanted, and to pay for planting and afterwards cutting them out without receiving any return : to this is to be added the exhaustion of the soil during their growth, and the consequent injury to the trees intended to remain for a crop. It is evident, that in all flourishing plantations (and there need be none other) the trees must be reduced to within six feet of each other by the ninth year, if not before. This will leave one thousand two hundred and ten upon an acre, and consequently one thousand five hundred and twelve must have been taken out if originally planted at four feet apart. If, then, there be no advantage in thus planting trees and cutting them out, why not plant at six feet apart in the first instance, and thereby much reduce the original expenditure, and the subsequent cost ? One thousand five hundred trees of the hard wood kinds, and of such a size as ought to be planted upon prepared ground, cannot be purchased and planted, including all charges, at less than from four to five pounds an acre, an expense which I consider as wholly thrown away. Trees planted at six

feet distance, upon land prepared as I have mentioned, will make more wood and be more healthy than those planted at four feet asunder, as they will always have more scope for their roots, and a free circulation of pure air, which is so essential to the health of plants. Many persons talk, and others write, about the old maxim of ‘planting thick’, without sufficiently adverting to the state of the soil to be planted. As applied to ‘the hills of Wales, ‘those of Derby, Cumberland, Westmoreland, ‘Northumberland, and part of Yorkshire and ‘Lancashire, and the more extensive wastes ‘and mountainous regions’ of Scotland, if planting upon the *Scotch* plan be adopted, the maxim may be proper. Thick planting may be useful upon a sterile unbroken soil; but where the plant can enjoy ‘the benefit of ‘having its roots placed amongst earth, which ‘has been rendered loose and penetrable,’ and where this earth is also naturally ‘fertile’ or rendered so by *manure*, the reason for thick planting no longer exists. We therefore never see nurses for rearing fruit-trees in a garden or an orchard, but they are at once plant-

ed at the distance from each other at which they are intended to remain.

I have within the last three years planted nearly one thousand apple-trees in an exposed situation, all of which are in the most healthy and flourishing state. Many of them have this year made shoots five feet in length, though they do not stand nearer than eleven or twelve feet from each other; but the ground has been kept under the spade, and is in good condition. And there is no reason why oaks or other forest-trees, which are more hardy than apple-trees in their nature, should not succeed equally well at such a distance, if it were thought desirable so to plant them. As, however, a profit may be derived from the thinning of trees from six to twelve feet asunder, I would recommend their being originally planted at the former rather than the latter distance, but certainly not closer.

As I do not profess to have had much practice in, or to have had the opportunity of making many observations on, the pruning and thinning of plantations, I will content

myself with laying before the reader the opinions of three friends, to whom I some time since applied for information on these subjects. They are gentlemen who have had very considerable experience, not only in the planting and rearing, but also in the sale and conversion of, timber ; and are, therefore, well qualified to give sound advice to the young planter. Two of them speak of pruning, and the other of thinning ; and you will see that the former are directly opposed to your opinion on the same subject. You observe, ‘ As to the necessity of pruning in general, it is proved by a single glance at the short stems and overgrown heads of the greater part of the oaks found in natural woods, compared with the close upright trunks of those which have felt in infancy a judicious application of the pruning-knife. The part of the tree, in the former case, which can be sawn out as useful timber, is not perhaps above three feet in length, while the stem of the latter has been trained upwards to the height of fourteen. It is in vain to contradict these facts by an appeal to nature. Nature is equally favourable to all her productions. It is the same to

‘ her, whether the *oak produces timber or*
‘ *boughs*, and whether the *field produces grain*
‘ *or tares*. Human skill and art avail them-
‘ selves of the operations of nature, by encou-
‘ raging and directing them towards such re-
‘ sults as are most useful to mankind. When
‘ we see nature raise a field of wheat, we may
‘ expect her to produce a whole forest of clean,
‘ straight, profitable timber—till then, we
‘ must be content to employ plough and har-
‘ row in the one case, hatchet and pruning-
‘ knife in the other.’

This may be very fine writing ; but inas-
much as the fact assumed as the basis of your
argument is incorrect, your reasoning upon it
must be inconclusive. You state, that the
greater part of oaks found in natural woods
possess overgrown heads and short stems, the
latter of which contain not more than *three*
feet in length of useful timber ; while trees,
which have from infancy felt a judicious ap-
plication of the pruning-knife, may be trained
to the height of fourteen : and hence you de-
duce the necessity of pruning, as a means of
encouraging and directing the operations of

nature. Where, *Sir Walter*, do you find natural oak woods, pruned or unpruned, in which the stems of the *greater part* of the trees do not exceed three feet, and even fourteen feet in length? Not in England I am pretty certain, nor yet I think in Scotland; and you cannot refer to the interminable forests and natural woods of America, from which we annually receive such immense quantities of fine timber, seventy and eighty feet in length, without a knot or a blemish. Did these trees ever receive the ‘judicious application of the ‘pruning-knife?’ or was ‘human skill and ‘art’ ever employed to avail themselves of the ‘operations of nature,’ to produce results so ‘useful to mankind?’

But why confine your observation to natural woods? It would, if true, equally apply to those which are raised by the hand of man; but there are thousands of such woods existing which give a complete negative to the ‘fact,’ on which you found the necessity of pruning. Particular instances need not be pointed out, because they are every where to be found, it being too well known to require proof, that

trees in woods will mount up to thirty and forty feet high in the bole, and as straight as gun-barrels, without the aid of either pruning-knife or hatchet. Moderate pruning may, and doubtless is, in many cases, proper; but for very different reasons to those assigned by you.

It is singular enough, that in the flowery paragraph I have quoted, you seem to have lost sight of the theory with which you set out; viz. that that mode of planting is most profitable, which is done at the smallest expense. Surely, if so much is left to nature in the first instance, it is a bad compliment to her to take her charge out of her hands afterwards. Indeed, the whole of that paragraph forms an excellent argument in behalf of the culture-system: the plough and the harrow in one case, and the spade of the trencher in the other, are employed for precisely similar reasons. The growth of vegetables or trees is accelerated and increased, not changed, by their use. Take your own words, beginning with 'nature is equally favourable to all her productions,' and, with a trifling alteration,

you deal a weighty blow to your own system. 'It is the same to her, whether the plantation produces trees or whins, copse-wood or fog.' Oh, *Sir Walter*! if you wish to have trees, you must not leave it to nature to decide between her offspring.

Now, *Sir Walter*, I will give you the opinions of the experienced, the really practical men to whom I alluded.

'The practice of pruning forest-trees, as generally pursued in this neighbourhood,' (on the borders of Suffolk), 'is in the highest degree injurious, not only as it retards their growth, but as it occasions a loss either to the proprietor or to the purchaser, when they are brought to sale at a future period. Year after year furnishes me with proofs of the last-mentioned injury. I witnessed a striking circumstance three years since: I purchased of a gentleman a number of fine oaks, one of which was a remarkably handsome and in appearance a healthy tree, for which fifty guineas had been offered. This tree, when stripped of its bark, proved the

‘ destructive practice of lopping off large
 ‘ boughs : instead of the proprietor making
 ‘ the price originally offered for the tree, its
 ‘ value was reduced below thirty pounds. If
 ‘ boughs are cut from trees, of a size which
 ‘ leaves the wounds too large for nature to co-
 ‘ ver, previous to the part decaying, the stump,
 ‘ or part from which the branch is cut, be-
 ‘ comes a ready conductor for rain or moist-
 ‘ ure, and conveys it down to the very centre
 ‘ of the tree, and produces decay at the heart.
 ‘ This occasions what is generally termed the
 ‘ white rot, and in nine cases out of ten it is
 ‘ owing to this absurd practice. A little ob-
 ‘ servation will I think confirm this opinion.
 ‘ Pollard trees, from undergoing repeated top-
 ‘ pings, have this defect, the white rot, more
 ‘ than any other, particularly the ash, and
 ‘ trees of a texture less close than the oak, and
 ‘ of more ready absorbance.

‘ In trees, particularly oak, when decay is
 ‘ produced by the hand of time, the wood as-
 ‘ sumes a red appearance : after that, the red
 ‘ rot takes place, not quickly, but slowly, till
 ‘ the whole mass is affected, and exhibits a

‘ rusty and burnt-like appearance, the colour
 ‘ deepest in the centre where nature first gives
 ‘ way : for this reason, red timber is rejected
 ‘ in the dock-yards as short and tender. Pru-
 ‘ ning, if done at all, should be done at an
 ‘ early period, and no larger boughs should be
 ‘ taken off, than the growth of bark will
 ‘ cover in a year or two, to protect the wood
 ‘ from the atmosphere; and even then, when the
 ‘ trees are cut, bad knots will appear : but, in
 ‘ many cases, I am aware that pruning must
 ‘ be resorted to, to improve the growth of *sur-*
 ‘ *rounding* trees, which may perhaps be valua-
 ‘ ble in another point of view than mere pecu-
 ‘ niary gain. It is a mistaken idea, that *by*
 ‘ *pruning you accelerate the growth of trees* : for
 ‘ more than twenty years I have witnessed its
 ‘ bad effects. The tree that is left to nature
 ‘ invariably increases faster than one subject
 ‘ to lopping and pruning. At the same time,
 ‘ I do not condemn cutting off the very small
 ‘ twigs, which shoot off in a lateral direction
 ‘ from the stem, to give a more sightly ap-
 ‘ pearance ; but I do protest against pruning
 ‘ for the purpose of improving the growth. If
 ‘ you deprive a tree of its leaves or mouths,

‘ the roots are unable to obtain that which en-
 ‘ bles them to perform their functions. Nature
 ‘ is true to herself. The single tree sends out
 ‘ its branches to catch and inhale every thing
 ‘ conducive to its productive powers. Where
 ‘ trees are thickly planted, nature directs
 ‘ them upwards, to obtain that which their
 ‘ situation prevents their getting in a lower
 ‘ medium ; consequently you observe the low-
 ‘ er boughs are thin and weak within, and fall
 ‘ off, whilst, in a young healthy tree, the top-
 ‘ most shoots exhibit vigour, and will make
 ‘ more wood upward, in a given time, than
 ‘ trees that stand singly : and hence the great
 ‘ length that trees obtain in woods.’

‘ I offer you a few observations on pruning
 ‘ forest-trees, although I am quite certain I
 ‘ can say nothing that will in the slightest de-
 ‘ gree tend to arrest the progress of that mania.
 ‘ As far as my experience and observation go,
 ‘ I am hostile to the system, which, according
 ‘ to a writer on the subject, was first intro-
 ‘ duced into England by some Scotch gar-
 ‘ deners as “ vast improvements.” The advo-
 ‘ cates for pruning pretend, that by cutting

‘ off what they are pleased to call superfluous
 ‘ branches, you occasion the trunk to swell,
 ‘ and the tree to thrive in a great degree more
 ‘ than it would do if let alone. “ This idea,”
 ‘ says *Mr. Miller*, “ is erroneous, for every one
 “ knows or ought to know, that the branch of
 “ a tree, with its foliage, contributes as much
 “ to its nutriment and support as the root itself.
 “ Let any one,” says the above quoted author,
 “ take the trouble of trying the experiment
 “ upon two trees of equal age and size, by lop-
 “ ping one of them, and suffering all the
 “ branches to grow on the other; and he will
 “ soon find the latter to exceed the former in
 “ growth every way.” Another author of great
 ‘ experience says,

“ It is generally recommended not to
 “ prune oaks, &c. &c., it being much better
 “ to let them alone; but if people will prune,
 “ let them do it in the autumn, and take off
 “ the branches close to the tree.”

‘ What *Mr. Cobbett* says about pruning
 ‘ elms, is equally applicable to all pruned
 ‘ trees. “ You produce,” says that great wri-

‘ ter “ a nasty knotty thing, good for nothing
 “ as timber, and ornamental in the eyes of
 “ those only, who like to see a sort of broom
 “ at the top of a handle twenty or thirty feet
 “ high.” Thick plantings of oak ought to be
 ‘ early and gradually thinned : if the opera-
 ‘ tion of thinning be delayed till the trees
 ‘ have attained a great height, thinning then
 ‘ becomes difficult, and in the opinion of
 ‘ many, useless.

‘ In 1819, when I was a good deal engaged
 ‘ at —, the gardener at that place happening
 ‘ to mention pruning, a conversation on the
 ‘ subject immediately took place ; and we
 ‘ agreed to make an experiment on two trees.
 ‘ Two beautiful young sapling oaks were ac-
 ‘ cordingly selected, one of which was pruned,
 ‘ and the other let alone with all its branches.
 ‘ The result was as the gardener had foretold,
 ‘ the latter tree quickly surpassed the former.
 ‘ As gardeners in general are great advocates
 ‘ for pruning, I was curious to know how it
 ‘ happened that this man was not. He told
 ‘ me he had lived in various services in diffe-
 ‘ rent parts of England, and that he had fre-

‘quently heard disputes about lopping of trees,
 ‘&c., which caused him to seek for informa-
 ‘tion on the subject. The result was, he was
 ‘thoroughly convinced that lopping forest-
 ‘trees was a most pernicious practice.’

I will trouble you with one more quotation, from the pen of a gentleman whose opinions will be received as good authority on any subject connected with rural economy. I mean the late *Mr. Nathaniel Kent*, from whose Survey of Norfolk, before referred to, I have extracted it.

‘I shall close my observations upon this
 ‘interesting subject with a word of advice,
 ‘by way of guarding against a pernicious
 ‘practice, which, though hitherto unknown
 ‘in this county, has lately got some footing
 ‘in it. I mean the *infamous custom* which
 ‘prevails, in some counties, of pruning up
 ‘trees by divesting them of their lower or la-
 ‘teral branches. When a plant is very
 ‘young, it is sometimes allowable to a cer-
 ‘tain distance, but should always be done
 ‘with great caution; but when trees have be-

‘gun to form themselves, it is a sort of MUR-
 ‘DER. It stops the growth, and produces ex-
 ‘treme deformity; for the sap in the spring
 ‘of the year, being checked in its natural dif-
 ‘fusion into the number of branches into
 ‘which it used to flow, becomes distorted—

“As knots, by the conflux of meeting sap,
 “Infect the sound pine, and divert his grain,
 “Tortive and errant, from his course of growth.”

SHAKSPEARE.

The friend, to whom I submitted my manuscript, has favoured me with the following observations on the subject of pruning :

‘I have found the practice of *cutting in* in
 ‘some cases beneficial. I allude particularly
 ‘to the poplar-tribe, of the black Italian of
 ‘which you are a grower, and still more some
 ‘of the other varieties which I have cultivated.
 ‘In young plants of this species, the branches
 ‘on the two and three year old wood will fre-
 ‘quently attain an equal height with the
 ‘leading shoot. Were these to be entirely re-
 ‘moved, the stem, during winter, would pre-
 ‘sent an appearance very similar to a boy’s

‘ home-made fishing-rod ; and in the ensuing
 ‘ spring, the whole strength of the root being
 ‘ exerted upon one thin twig, would cause it
 ‘ to put forth a greater quantity of leaves than
 ‘ it could reasonably bear : and, as the most
 ‘ probable result, the first high wind or heavy
 ‘ rain would snap off the shoot, and leave you
 ‘ farther than ever from the object you were
 ‘ desirous of obtaining. But by moderately
 ‘ cutting in these branches (say to two thirds
 ‘ of their length), I have invariably found
 ‘ them, not only deprived of the power of re-
 ‘ gaining their former place, but their propen-
 ‘ sity to increase in bulk considerably dimi-
 ‘ nished ; and if cut still closer, they are fre-
 ‘ quently, at the end of a summer’s growth,
 ‘ equalled in size by the shoots a year younger
 ‘ than themselves : they may then be removed
 ‘ if necessary, without incurring the risk I
 ‘ before anticipated ; and the wound caused
 ‘ by their removal is smaller in proportion to
 ‘ the size of the stem, than it would have been
 ‘ had the operation been performed a year
 ‘ earlier. A similar effect is produced in a less
 ‘ degree, wherever the bud at the *end* of a
 ‘ shoot has been removed either by design or

‘ accident. These observations have confirmed me in the opinion, that after the vessels of a tree are filled with sap from the roots in spring, every bud, at the same time that it shoots externally, sends forth innumerable fibres downward between the bark and the wood, constituting as it were a number of independent plants, deriving their nourishment from the juices deposited there, which may be compared to the chyle of the animal body, in the same manner as the whole tree derives its grosser nutriment from the earth; and that it is this constant accession of fibrous matter, which causes the increase of trees in bulk.’

The correspondent, whom I am about to quote on the subject of *thinning*, is a countryman of yours, whose ability, judgment, and experience give great weight and authority to his opinions. I must first notice his observations about planting, as one of them is alluded to in his remarks on thinning. He says—

‘ Much depends upon the young trees being *well set off*: stunted trees are like stunted

‘ pigs—both may be improved, but neither
 ‘ will thrive well.

‘ Your system of manuring land for plant-
 ‘ ing is, in a great measure, new. Paring
 ‘ and burning turf, trenching, or deep plough-
 ‘ ing, in preparation for planting, and hoeing
 ‘ the land after being planted, are old ap-
 ‘ proved practices, but have *in too many in-*
 ‘ *stances been disregarded of late years.* Apply-
 ‘ ing muck, or other rich manure, to particu-
 ‘ lar patches of land preparatory to planting,
 ‘ is also an old practice ; but I do not remem-
 ‘ ber hearing of that practice being extended
 ‘ to general planting, in the manner you have
 ‘ done, and I am led to believe you are the
 ‘ first person who has published on the subject,
 ‘ and recommended the practice as a general
 ‘ measure.

‘ You probably have never heard of the
 ‘ four maxims of a celebrated planter, *Lord*
 ‘ *Frederick Campbell*, who flourished before
 ‘ your time. These were—*fence well, dig deep,*
 ‘ *plant thick, and keep clean.* To those I add a
 ‘ fifth—*thin with good judgment ;* and I am

‘ bold to say, there are more errors commit-
 ‘ ted, and greater loss sustained, by misman-
 ‘ agement in the fifth maxim, than in all the
 ‘ others. I therefore beg leave to call your
 ‘ particular attention, to the important mea-
 ‘ sure of commencing the thinning operation
 ‘ in your free-growing plantations at an *early*
 ‘ period. I have seen many fine plantations
 ‘ of forest-trees spoiled, from neglect of early
 ‘ thinning, and many injured from improper
 ‘ thinning ; but I never saw one instance of
 ‘ failure of success in early, progressive, judi-
 ‘ cious thinning. The general rule for that
 ‘ operation is—*a little and often*. I have com-
 ‘ pared stunted trees to stunted pigs—thick
 ‘ plantations of forest-trees may also be com-
 ‘ pared to thick plantations of turnips. It is
 ‘ as necessary to thin one at an early period as
 ‘ the other, and without thinning there will
 ‘ be but a scanty crop of either bole or bulb.

‘ In cutting off young trees, for the pur-
 ‘ pose of obtaining new stems or leaders, you
 ‘ should *see* that the operation is performed by
 ‘ cutting *up*, which leaves a sound stub, and
 ‘ a sound healthy shoot may be expected to

‘ arise from it. When cut *down*, the stub is
 ‘ shattered, and throws out a number of puny
 ‘ weak shoots. The shatters in the stub are
 ‘ conductors for wet, which produces canker
 ‘ in the plant and premature old age.’

These, as I before observed, are the remarks of a sound practical man, and they are well worthy the attention of all planters.—Your own observations on thinning are to the same effect, and are expressed with so much eloquence and force, that I hope you will excuse, and I am sure the reader who has not seen them will thank, me for giving them a place here.—

‘ The mode of thinning is greatly altered
 ‘ and improved of late years. The sordid and
 ‘ narrow-minded system, which postponed the
 ‘ operation until the thinnings should be of
 ‘ some value, is now we hope exploded. To
 ‘ treat a plantation in one way or other, with
 ‘ reference to the value to be derived from
 ‘ thinning, would be as if a carpenter should
 ‘ cut out his wood, not with relation to the
 ‘ ultimate use which he was to make of it, but

‘ to the chips which the operation was to pro-
 ‘ duce. These, indeed, are not to be thrown
 ‘ away, if they can be profitably disposed of ;
 ‘ but it would be wild to permit them to be
 ‘ considered as a principal object. In modern
 ‘ times, we rarely see those melancholy wrecks
 ‘ of woods which have once been promising,
 ‘ but where the nurses have been allowed to
 ‘ remain, until they choked and swallowed
 ‘ the more valuable crop, which they had
 ‘ been intended to shelter ; and where the
 ‘ former existence of oaks, elms, and ashes, is
 ‘ only proved by a few starting bushes, which,
 ‘ being near the verge of the plantation, have,
 ‘ by straggling and contorting their boughs,
 ‘ contrived to get as much of the atmosphere
 ‘ as is sufficient to keep them alive, whilst
 ‘ the interior of the wood presents only a dull
 ‘ and hopeless succession of spindle-shanked
 ‘ Scotch firs, which, like a horde of savages,
 ‘ after having invaded and ruined a civilized
 ‘ and wealthy province, are finally employed
 ‘ in destroying each other. Timely thinning,
 ‘ commenced in the fifth season after planting
 ‘ and repeated from time to time as occasion

‘ requires, effectually prevents this loss of
 ‘ hopes, plants, and labour.

‘ We would just beg to remark, that it is
 ‘ an indifferent, though too frequent mode of
 ‘ thinning, which prescribes the removal of a
 ‘ certain number of plants, a sixth part, or as
 ‘ the case may be, indifferently over the whole
 ‘ plantation. On the contrary, we would be
 ‘ disposed to thin freely the bottoms, hollows,
 ‘ and sheltered places, so that the nurses
 ‘ should be entirely removed in the first in-
 ‘ stance from those places where their presence
 ‘ is least necessary ; while they are permitted
 ‘ to retain their station longer on the verges of
 ‘ the wood, or on those exposed heights where,
 ‘ like division-hedges in large gardens, they
 ‘ have been originally planted with a view of
 ‘ shelter to the lower ground. In process of
 ‘ time, however, these verges and heights
 ‘ must be gradually thinned out ; for warmth
 ‘ and shelter cannot make amends to trees, any
 ‘ more than to mankind, for the want of vital
 ‘ air. It requires the attentive watchfulness of
 ‘ the forester to discover where, or in what

‘ proportion, the air is to be introduced into
 ‘ an exposed plantation upon the windward
 ‘ side. If the screen is too speedily opened,
 ‘ the trees, suddenly exposed to cold and stor-
 ‘ my winds, become disordered in the sap-ves-
 ‘ sels, hide-bound, and mossed, and finally
 ‘ dwindle into unsightly shrubs, or perhaps
 ‘ die entirely. If the air be not admitted at all
 ‘ or in due quantities, they are equally sure to
 ‘ wither and decay for want of breath. This
 ‘ dilemma arises from not observing the ad-
 ‘ dress, so to call it, with which trees adapt
 ‘ themselves to an exposed or more sheltered
 ‘ situation.

‘ On the outside of the plantation, in
 ‘ hedge-rows, or where they stand single or in
 ‘ small groups, trees have great heads, short
 ‘ stems, thick and rugged barks, all of which
 ‘ are accommodated to their peculiar situation,
 ‘ the short stems giving them most resistance
 ‘ against the storm, the great branches best
 ‘ balancing the tree when swayed by the gale,
 ‘ and the thick rugged bark protecting the
 ‘ sap-vessels against the inclemency of the
 ‘ weather. For the contrary reasons, trees of

‘ the same species, placed within the shelter
 ‘ of a grove, rise with clear stems, covered
 ‘ with thin and smooth bark, having lofty
 ‘ but small heads, and all the attributes of a
 ‘ plant accustomed to a milder climate.* But,
 ‘ if the shelter be allowed to become too close,
 ‘ the tree, like a valetudinary in an over heated
 ‘ room, becomes injured by the very
 ‘ means adopted for its preservation. On the
 ‘ other hand, if the physician wished to allow
 ‘ such a patient a fresher atmosphere, he
 ‘ would certainly allow him time to put on
 ‘ warmer clothing. To pay the same respect
 ‘ to the trees in the interior of our plantation,
 ‘ the outside trees must be thinned, and they
 ‘ must be thinned gradually. Some managers
 ‘ of woods contrive to combine both errors, by
 ‘ neglecting the necessary thinning for years,
 ‘ and finally setting about it with a hasty and
 ‘ unsparing hand. Time and experience alone
 ‘ can teach the forester to observe a medium
 ‘ course in this important operation; but

* Surely this passage is somewhat at variance with
 your description of the growth of natural woods, quoted
 in page 92.

‘ as to thinning in general, it may be received
 ‘ as a maxim, that he who spares the axe
 ‘ hates the wood.

‘ The duty, indeed, requires in its own
 ‘ nature some share of stoical resolution, nor is
 ‘ it to be approached without a feeling of reluctance. The lonely, secluded, sheltered appearance of your plantation is violated by the
 ‘ intrusion of your hatchet-men: you look
 ‘ with regret on the hopeful tall plants, whose
 ‘ doom you are about to seal; and feel yourself, in the same moment, unable and unwilling to select which of the darling family,
 ‘ a family of your own planting and rearing,
 ‘ are to perish for the benefit of the survivors.
 ‘ Neither is it very consolatory to look upon
 ‘ the altered scene, after the havoc has taken
 ‘ place. It is but four years since, when no
 ‘ employment was so grateful, as that of
 ‘ watching and protecting the growth of the
 ‘ trees that are now lying prostrate on the
 ‘ ground: your old secret path, encumbered
 ‘ by boughs and branches, seems rudely laid
 ‘ bare to the sun. Many of the trees which
 ‘ remain, in spite of the woodman’s utmost

‘ care, have suffered by the fall of their com-
 ‘ panions, and

“ — the broken boughs
 “ Droop with their wither’d leaves, ungracious sign
 “ Of devastation.”

‘ The scene is not improved by the man-
 ‘ gled appearance of larches and firs, which,
 ‘ destined to the axe on the next occasion,
 ‘ have, in the mean time, been deprived of
 ‘ side-branches, like the more notorious crimi-
 ‘ nals, who are mutilated of their limbs before
 ‘ they are executed. In a word, the whole
 ‘ scene seems one of violation, and in its con-
 ‘ sequences resembles the ravage of the nut-
 ‘ gatherer, as is described by *Wordsworth* :

“ Then up I rose,
 “ And dragg’d to earth both branch and bough,
 with crush
 “ And merciless ravage ; and the shady nook
 “ Of hazels, and the green and mossy bower,
 “ Deform’d and sullied, patiently gave up
 “ Their quiet being.....
 “ I felt a sense of pain, when I beheld
 “ The silent trees and the intruding sky.”

‘ But a visit to the plantation in the ensuing
 ‘ June will more than recompense the pain,
 ‘ which is natural to the performance of this
 ‘ act of duty. All then is again grown fair,
 ‘ and green, and shady : the future groves
 ‘ affording appearance of improvement, which
 ‘ rarely fails to surprise the spectator ; and
 ‘ your firmness in the preceding season is
 ‘ compensated by the certain indications,
 ‘ that large progress has been made in the ac-
 ‘ complishment of your patriotic as well as
 ‘ profitable object.’

I most cordially agree with you, *Sir Walter*, in the sentiments so eloquently expressed in the foregoing paragraphs ; as I also do with the concluding part of your Essay, in which you endeavour to rouse the ‘ lords of the soil’ from that ‘ fatal *vis-inertiae*, that indolence, ‘ which induces them to be satisfied with what ‘ they can obtain by immediate rent,’ rather than encounter the expense and trouble of attempting modes of amelioration, which promise only a ‘ tardy and distant return.’ This, you say, is the only decent pretext for resisting a call which is sounded from every quar-

ter. It may be as you say, a selfish excuse ; but while it exists, it will be in vain to appeal to that ‘ patriotic spirit, which might be supposed to be sufficiently rewarded, by preparing for the future conquests of the British navy, and for the ornament of their native land.’

It is, as you observe, ‘ in vain to speak of the future welfare of the country, or of the immediate benefit to the poorer inhabitants, or of the honour justly attached to the memory of an extensive improver.’ It is in vain to do all this. We must, therefore, as you also say, ‘ talk to the proprietors of *pence* as well as patriotism.’ If they be insensible to the benefit, which their families must derive from the improvement recommended, we must hold out to them the advantages which may be derived by *themselves*. We must convince them, that the profits of plantations are not ‘ tardy and distant,’ but speedy and certain ; but to do this, *Sir Walter*, we must abandon the Scotch system. We must not delude them with promises of great profits, to be obtained at little expense. Neither must

we allow them to calculate upon the ravages of mice, or the destructive effects of whins, broom, fern, or rank herbage. We must not lead them to expect a continual drain upon their pockets for filling up and mending, in order to ensure a crop; nor tell them of the necessity of cutting down nine out of ten of the hard-wood trees in the third year, because they are stunted and will not grow. No, sir: if we notice these things, it must be, not as difficulties to be surmounted, but to be *avoided*: not as casualties to which they are necessarily liable, but which they may by care and attention altogether prevent. We must prove to them that trees, like all other plants, require a well prepared, pulverized, and fertile or manured soil; and that the expense attending it is equally necessary, and will pay as well for trees as for turnips or for any other crop. We must show them, or inform them, where they may see *undeniable* instances of the success of this style of planting; and having done this, we may surely expect that they will then obey the ‘call which is ‘sounded from every quarter,’ to improve all their waste lands by planting without delay,

on the score of interest if not of patriotism, for the benefit of their families if not for the good of their country.

That no time can be more fitting than the present, for the commencement of so praiseworthy an undertaking, alike beneficial to individuals and the public, cannot be doubted. We hear of millions of money, disengaged from profitable employment, lying comparatively useless in the hands of the proprietors. We know, that millions of men are starving, or existing upon parish-allowance, from the want of the employment which a profitable expenditure of that money would afford ; and we see the poverty and idleness, in which these millions may be said to live, producing their natural effects — theft, drunkenness, *poaching*, and even *murder*.

Is it not, then, an imperative duty—does not self-preservation as well as self-interest call upon the wealthy—to extend the means of employment to the industrious but distressed and suffering labourer ; and to lend a hand to rescue him from poverty, and those baneful

consequences, which render property insecure, and tend to the degradation of our national character ?

Here, *Sir Walter*, I feel the want of your pen, to enable me to appeal with effect to the great landed proprietors, and to prove to them how closely their interests are bound up with the welfare of the labouring classes—to show, how much more it would be to their advantage to be surrounded by industrious, well-fed, happy, and contented labourers, devoted to their interests, rather than have their estates encumbered by idle, half-starved, discontented paupers, frequently engaged in acts of plunder and violence, and ripe at all times to avail themselves of any opportunity for wreaking their vengeance upon those, whom, under other circumstances, they would sacrifice their lives to protect. This is no exaggerated picture of the condition and feelings of the majority of the labouring classes, no supposititious or imaginary evil, no chimerical or false notion ; but a real, palpable, existing, and notorious deformity in the present state of society.

I have opportunities of knowing, and I do know, the feelings of the labouring classes towards their employers and superiors; and I have no hesitation in saying, that, bad as is their condition, though they have suffered much and have but too frequently been ill-used, nothing is wanted but remunerating wages, good living, and kind treatment, to bring them back to those honest, industrious, and obedient habits, for which their forefathers in the same situation of life were distinguished.

I am not sanguine or weak enough to believe, that by any planting project, however bold or general, the condition of the labourer can be so improved, that poverty and want, and even pauperism, will wholly disappear; but although *all* this cannot be accomplished, *much* may still be done.

If landed proprietors, possessing the means, would earnestly set to work in the improvement of their estates, they might give profitable employment to all those surplus labourers as they are called, who are now in fact main-

tained *unproductively* at the expense of their tenants or themselves : and might thus, at one and the same time, add to their wealth, diminish their burdens, relieve their tenants, and greatly increase their own influence and respectability.

The planting of forest-trees is one of the means of accomplishing this object ; and to do it effectually, and prevent both loss and disappointment, the planter has only to adhere rigidly and *unparsimoniously* to the following maxims.

Maxims for profitable Planting.

Trench fourteen or eighteen inches deep, with the spade or plough, and put on as much manure as if turnips were intended to be sown.

Select your trees according to soil and situation, giving the preference to locust, ash, elm, Spanish chesnut, and oak. Plant each sort by itself, six feet apart ; and where these will grow well, reject the fir-tribe altogether.

Suffer no potatoes, carrots, or other crop to be grown among your trees ; but hoe annually four or five times for three years, and after that period twice a year for four years, whether weeds appear or not, the object being to keep the soil *loose*, as well as clean, upon the surface.

If you prune, proceed cautiously, and merely remove competing branches, and shorten those that whip or lash surrounding trees.

Thin early and carefully, doing little and often, and sparing at *first* those parts exposed to the north and east winds.

I should here conclude ; but I cannot do so without observing, that although I have freely canvassed your doctrines, and on some occasions expressed myself perhaps with too much warmth, I have been influenced by no personal or prejudiced feeling towards you or your countrymen, but solely by an anxious desire to prevent the spread of wrong notions

on the important subject of planting. If I have in any instance done you injustice, by misrepresenting your motives or misstating your opinions, I shall be happy not only to correct but to apologize for my error : and on the other hand, if my humble arguments, homespun and unvarnished as they are, should have the effect of altering those opinions, I feel confident that your candour will induce you to acknowledge it, and that you will not suffer your great name to be used as a sanction for practices, which will, in most cases, prove extremely injurious in their results to those who adopt them in private life, and cannot be too strongly censured when followed at the public expense in great national undertakings. I am, sir,

Your obedient and

Very humble servant,

W. WITHERS.

Holt, Norfolk, Jan. 1, 1828.

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